Bayshore Freeway Construction

By W. G. REMINGTON, Associate Highway Engineer

THE Bayshore Freeway is, to many thousands of motorists entering and leaving San Francisco from and to the south, becoming a near reality with the letting of several road and structure contracts for work between San Mateo and South San Francisco.

Particularly noticeable to users of the present overcrowded Bayshore Highway is construction on a contract for 2.2 miles of freeway between Broadway in Burlingame and State Street in San Mateo which was awarded to the Guy F. Atkinson Company at a cost of approximately $630,000. This project utilizes the present traveled way for three lanes of a six-lane freeway with an outer highway and miscellaneous ramps and connections. Additional right of way to accommodate this project provides a minimum width of 153 feet expanding to greater widths as necessary at points of interchange and along tideland areas.

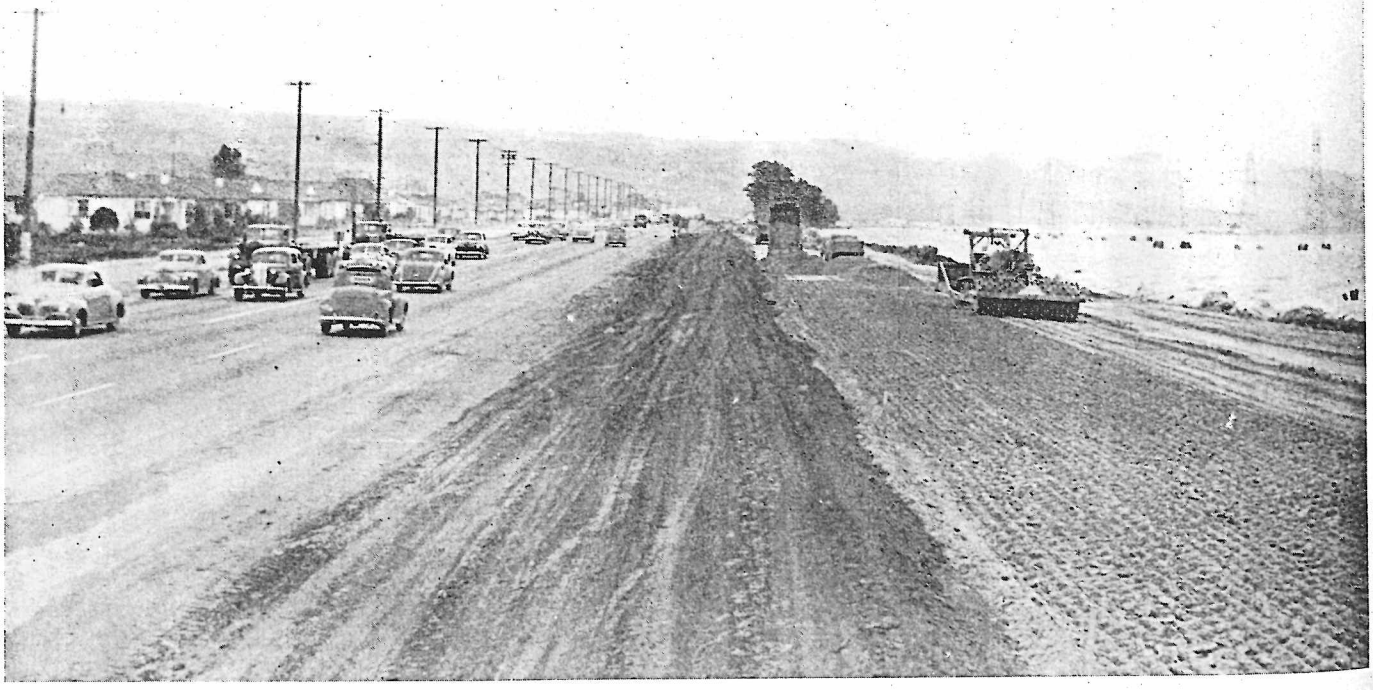
ACCESS RIGHTS ELIMINATED

All access rights from abutting properties have been eliminated from the freeway except at points where interchange structures provide this service.

The present four-lane Bayshore Highway was completed in 1931 and consists of a high standard Portland cement concrete surface 40 feet in width. This route is the main artery serving San Francisco from the south and accommodates a large percentage of the commuter traffic to and from the rapidly expanding residential area in San Mateo and Santa Clara Counties.

Traffic on this route has increased rapidly in the past 15 years until over 25,000 cars per day are now carried over the section included in this project. Hourly peaks of over 3,000 cars have recently been observed. A large percentage of the traffic is composed of heavy trucks and the accident rate on this section of the Bayshore Highway is one of the highest in the State. These conditions dictated that the present highway be reconstructed along full freeway standards with all direct access, left turns and crossing movements completely eliminated.

Looking north on Bayshore project, showing construction of fill for northbound freeway section. Traffic is on present traveled way



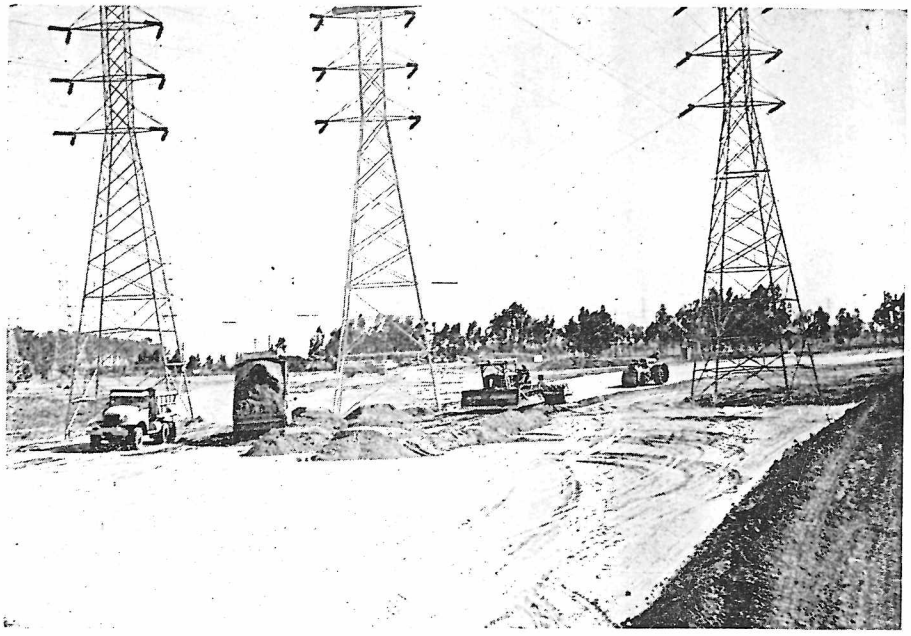
SIX-LANE FREEWAY

Development of the six-lane freeway section is being accomplished, first by utilizing the existing pavement for the southbound traffic. The present 40-foot traveled way will be reduced to 36 feet by placing a "Class C Fine" seal coat on the outer four feet of the existing pavement as well as on four feet of the existing shoulder on that side, thus providing three 12-foot lanes for traveled way and an eight-foot shoulder on the outside. The existing shoulder will be utilized on the inside for a width of eight feet.

Northbound freeway traffic will be routed over a new section being constructed on the east or bay side of the existing pavement. This new section will consist of a Portland cement concrete slab of a uniform eight-inch thickness placed on a half inch sand cushion over four inches of crusher run base. The outside shoulder will consist of two inches of plant mixed surfacing eight feet wide placed over a three-foot crusher run base border of variable depth adjacent to the pavement while the inside shoulder will be two feet wide and placed on crusher run base. Adjacent edges of the northbound and southbound traveled ways are 36 feet apart.

Design of the freeway section provides sufficient width for the construction of two additional lanes within the center division strip and still allows a minimum separation of 12 feet.

An outer highway is being provided on the west side of the freeway to serve the existing highway frontage and the numerous city streets which intersect the present Bayshore Highway. This outer highway will consist of a 23-foot, two-lane traveled way constructed of three inches of asphalt concrete placed on six inches of crusher run base. On the east or freeway side a Portland cement concrete curb and one-foot gutter are being constructed. On the right an eight-foot Portland cement concrete curbed parking strip six inches thick will be placed directly on select imported borrow. Provision for a sidewalk area with a nominal width of 10 feet between the face of the outside curb and the right of way line has been made.



Looking south, showing construction of freeway fill and fill for overhead around existing Pacific Gas and Electric power poles

The parkway between the freeway and outer highway will be a minimum of 11 feet from the edge of the freeway shoulder to the inside curb of the outer highway. A chain link fence along this parkway will provide a physical barrier.

An overhead grade separation at Peninsular Avenue is being constructed simultaneously with the road work under a contract awarded to the Macco Construction Company at a cost of approximately $282,000. T. E. Ferneau is Resident Engineer for the Bridge Department on the structure. Ramps and connection to this structure are being built under the road contract and will be surfaced with three inches of asphalt concrete placed on six inches of crusher run base.

At either end of the project transition sections are planned to taper into the existing roadway. Surfacing for the transition at the south end of the project will be four inches of alphalt concrete placed on eight inches of crusher run base. It is anticipated that this connection will be in service for several years.

The northerly transition will have three inches of plant mixed surfacing on eight inches of crusher run base.

Looking south showing construction of final subgrade

This latter connection will be more temporary and will be removed to connect the freeway with the 5.1 miles of freeway around the San Francisco Airport, now under construction under a contract recently awarded to the Macco Construction Company and Morrison-Knudsen Company, Inc., at a cost of approximately $2,900,000.

240,000 TONS OF MATERIAL

It has been necessary to use imported borrow to construct a majority of the fills and ramp connections due to the small amount of excavation and the lack of any other suitable material within the limits of the job. This item amounting to approximately 240,000 tons is, therefore, one of the major items of the contract.

A small area of marshy ground with a mud depth varying to a maximum of 12 feet was encountered at the beginning of the project under both the freeway and the outer highway and extending from Broadway for a distance of approximately 1,000 feet south. The lower two feet of the fills in this area, the heights of which average about six feet, has been made of imported borrow of a rocky nature that will not break or soften in the presence of water.

A surcharge has been placed on this fill by building it approximately one foot above the final pavement grade. Settlement measuring platforms were constructed in these fills and a record of the settlement has been made both during construction of the fill and after placement of the surcharge was complete. The surcharge will not be removed until settlement has either ceased or is satisfactorily stabilized.

The new freeway section is immediately adjacent and subject to action of the bay for a length of about 1,600 feet. A heavy riprap wall two and one-half feet thick and on a 1½:1 slope is provided on the bay side slope of the fill in this area.

There are no major structures on the project except for the overhead at Peninsular Avenue which was previously mentioned. Drainage is cared for in the main by extending and modifying existing facilities to the requirements of the new freeway. This includes extension of one triple 10′ x 8′ reinforced concrete box culvert, extension of numerous small pipe culverts and the construction of necessary inlets.

The initial stage of landscaping is provided for by scarifying and placing top soil on the center division strip, the parkway between the freeway and outer highway and the easterly slope of the freeway except in area where riprap wall is being placed. Western rye grass will be seeded in these areas.

This project should be completed and opened to public traffic early in the spring of 1947.

Looking north along riprap wall and adjacent fill

W. G. Remington is Resident Engineer in direct charge of the project which is under the general supervision of Jno. H. Skeggs, District Engineer, and R. P. Duffy, District Construction Engineer.

Old "Diggins" Scene of Road Work

(Continued from page 8)

separation structures will be completed early in 1947 and before the completion of the grading and paving contract.

The new road will be an integral portion of U. S. Route 40 and will carry interstate as well as local traffic. The estimated present average daily traffic is 7,000. The section of road now being constructed will replace the existing route of the highway through the streets of Auburn now inadequate to care for the increased traffic on U. S. Route 40 and the augmented local travel.

The work through Auburn required the relocation and adjustment of many sanitary sewer and water service lines, and such work is being done under the contract. It was also necessary to place 560 lineal feet of 48-inch reinforced concrete pipe to carry the Boardman Canal, a Pacific Gas and Electric Company facility, under the new roadway.

The major portion of the grading work has been completed. Heavy power scrapers were employed on most of this work, with a two-yard shovel excavating cuts on the easterly end of the project where rock was encountered. A large air compressor is employed in the drilling of the rock formations.

The Portland cement concrete paving will not be placed until next spring. Three inches of the four inches of imported subgrade material placed under the pavement will be bituminous treated. The subgrade material will be obtained from an abandoned railroad fill of disintegrated granite near Newcastle.

The connecting ramps to the separation structures at East, Walsh and Elm Streets will be constructed of crusher run base five inches thick with a wearing surface of three inches of plant-mixed material.

The contract for this work was awarded on June 24, 1946, to Fredrickson and Watson Construction Company. The total amount of the contract is $614,492.50. The same company was also awarded a contract September 16, 1946 in the amount of $194,-103.12 for the construction of 1.7 miles of highway between Auburn and the Wise Canal on the Auburn-Grass Valley highway. A channelized connection will be made with the new construction on U. S. Route 40 in Auburn in the vicinity of the East Street separation structure. The Resident Engineer on both contracts is E. L. Miller, and the work is under the supervision of C. H. Whitmore, District Engineer.

Report to the California Toll Bridge Authority

Covering Preliminary Studies

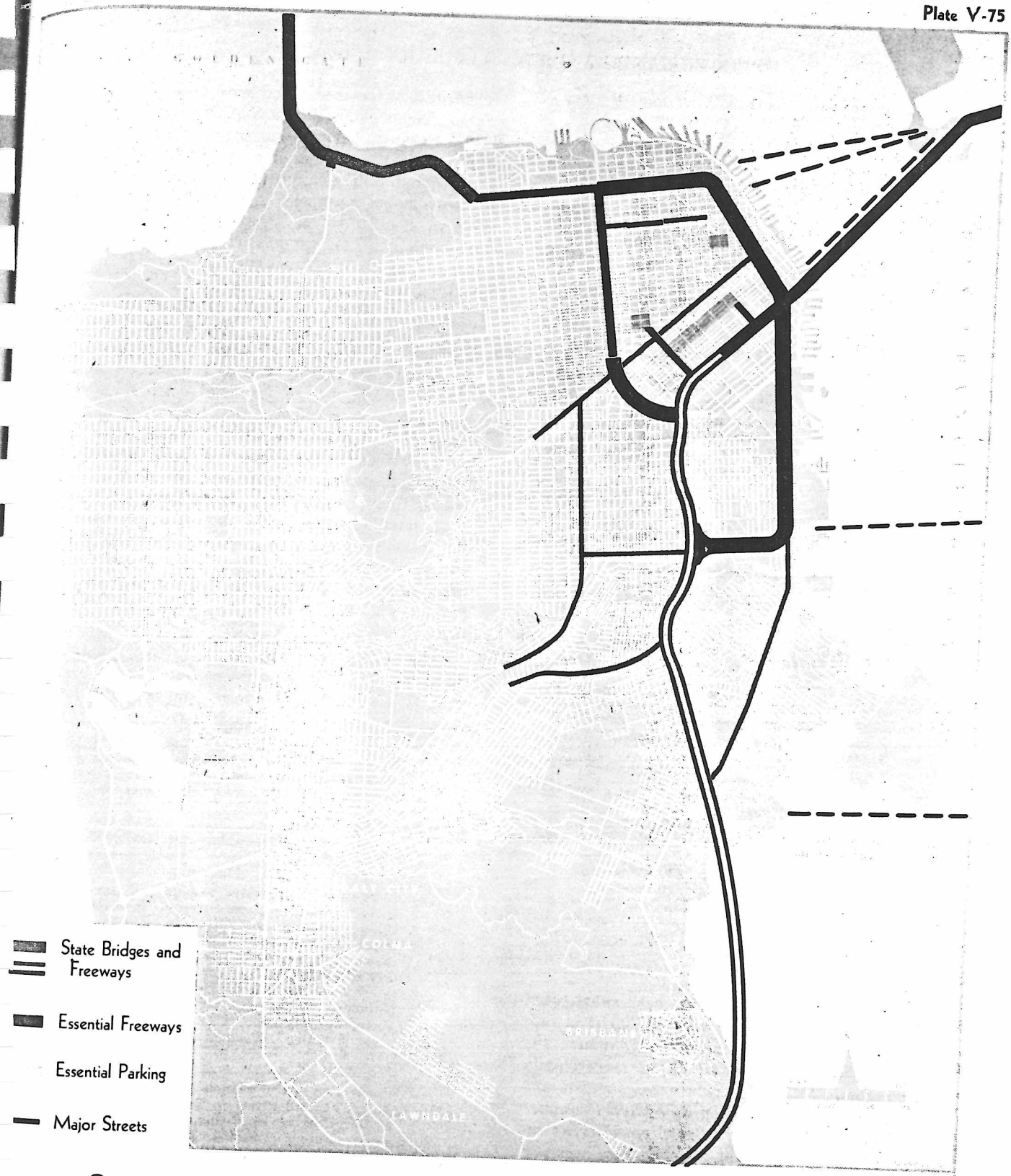
for an

Additional Bridge Between San Francisco and the East Bay Metropolitan Area

BY DEPARTMENT OF PUBLIC WORKS

January 31, 1947

printed in CALIFORNIA STATE PRINTING OFFICE



State Bridges and Freeways

Essential Freeways

Essential Parking

Major Streets

System of Existing and Proposed Thoroughfares Directly Related to the Second Bay Crossing

SAN FRANCISCO AND ENVIRONS

SAN FRANCISCO CITY PLANNING COMMISSION

Central Embarcadero and Southern Embarcadero on the 1958 Plan

2117. The apportionments made under Sections 2115 and 2116 shall be used by the counties exclusively for construction expenditures upon the county primary road systems.

2118. The moneys transferred to the State Highway Fund, for expenditure in cities and cities and counties under Section 2107 shall be expended as provided in Sections 194 to 202, inclusive, of this code.

2119. The State Controller shall not draw his warrant upon the Highway Users Tax Fund in favor of any county or city which has failed to establish any street or road fund as required by law, or which has failed, neglected or refused to file any report required by law, showing the amount of money received by such city or county from the Highway Users Tax Fund and the disposition thereof. On satisfactory proof by such city or county to the State Controller of the establishment of such road fund or the filing of such report, such warrant shall be issued.

2120. Upon the request of the board of supervisors of any county, the Controller may deduct from the apportionment to such county any amount specified in such request and pay the amount to any state department for services to be furnished in accordance with the request. This includes, but is not limited to, the payment of salaries and wages for crossing guards furnished by the Department of Motor Vehicles.

2121. In May of each year each county shall submit to the department any additions or exclusions from its mileage of maintained county highways, specifying the termini and mileage of each route added or excluded from its county maintained roads. The department shall either approve or disapprove each such inclusion or exclusion and in the event of a disapproval the county shall have the right to appeal as provided in Section 74. The department shall as required by State Controller certify to him county mileage figures. No appeal shall affect any apportionment made by the Controller pending the determination of the appeal. If, on such appeal, additional mileage is allowed to the county, the department shall immediately certify the corrected figure to the Controller, and the same shall be used for subsequent apportionments.

CHAPTER 5. ACCOUNTING, REPORTS AND AUDITS

2150. All amounts paid to each county, out of the Highway Users Tax Fund shall be paid into its special road improvement fund. The board may pay into said fund any other money available for roads. All money received by a county from the Highway Users Tax Fund shall be expended by the county exclusively for county highway purposes, including but not limited to the acquisition of real property or interests therein for, or the construction, maintenance or improvement of county highways and county aid to cities.

2151. On or before the first day of October of each year, the governing body of each county and city shall cause to be made and filed with the State Controller a complete report of the expenditures for street or road purposes during the fiscal year ending on the thirtieth day of June next preceding. The State Controller shall prescribe the form and contents of the report.

2152. The report shall contain the following:

(a) A detailed statement of all money available from all sources during the fiscal year covered by the report, including money made available by the United States, the State, the county or city, any other governmental agency, and money available from bond issues, special assessments, or from any other source whatever for expenditure for street or road purposes.

(b) A detailed statement of all expenditures during the fiscal year covered by the report for street or road purposes, including obligations incurred but not yet paid. The statement shall be broken down into expenditure categories, such as expenditures for rights of way or other property, new construction, reconstruction, widening, resurfacing, maintenance, repair, and acquisition and maintenance of equipment. Expenditures on the county primary road system shall be separately reported.

The State Controller, with the advice of the department, may prescribe such other expenditure categories and may require such detail as may be deemed necessary by him fully to disclose the nature and extent of all financial transactions by the county or city relating to streets or roads.

2153. The State Controller shall take such steps as he may deem necessary to insure that such reports are adequate and accurate.

2154. The State Controller shall annually tabulate and compile all such reports received by him and shall distribute copies of such tabulation and compilation to the Governor, the Lieutenant Governor, the Members of the Legislature, the department, the Legislative Auditor, the cities and the counties, and to any legislative committee charged with the investigation of streets, roads, highways, or bridges in this State.

2155. No state money shall be allocated to or made available for expenditure by any county or city at any time when such county or city is delinquent in filing the report provided for in this article.

SEC. 1.5. Section 29 is added to the general provisions of the Streets and Highways Code, to read:

29. "Construction" includes:

(a) Acquisition of rights of way and material sites and the payment of damage claims under Section 14 of Article I of the Constitution.

(b) Construction.

(c) Reconstruction.

(d) Replacement.

(e) Any improvement excepting maintenance as defined in Section 27.

SEC. 2. Article 2 of Chapter 2, of Division 1 of the Streets and Highways Code is repealed and a new Article 2 is added to Chapter 2 of Division 1 of said code, to read:

Article 2. The Expressways System of State Highways

250. This article may be cited as the State Expressway Law of 1947.

251. For the purposes of this chapter, an express highway or expressway is a highway or street especially designed for through traffic, and over, from, or to which owners or occupants of abutting land, or other persons, have no right or easement or only a limited right or easement of access, light, air, or view by reason of the fact that their property abuts upon such expressway, or for any other reason.

252. The terms "express highway," "expressway," and "freeway" shall be synonymous and interchangeable and all of the statutes of this State applicable to freeways shall, unless inconsistent with any of the provisions of this chapter, be applicable to the expressway system of highways described or provided for in this article.

253. Nothing in this article shall be deemed to prevent the commission or the department from acquiring or constructing any other state highway as an expressway or freeway or declaring any state highway to be a freeway as authorized under any of the provisions of this code or any other statute.

254. The expressway system of state highways shall consist of those interstate highway routes and necessary extensions thereof described in this article.

255. There shall be a state-wide network of continuous through routes in rural and urban areas following the general existing state highway routes and conforming generally with the present two major north and south United States highway routes and the east-west highway routes and necessary extensions thereof as described in the succeeding sections.

256. The state wide network of expressway routes and necessary extensions is described in Sections 257 to 283, inclusive.

257. From the Mexican boundary near Tia Juana to San Francisco and from the south shore of Marin County to the Oregon state line near the town of Smith River via San Diego, Los Angeles, San Francisco and the coast counties. That portion of the above described expressway route from State Highway Route 165 to Cahuenga Pass is known as the Hollywood Expressway.

258. From the Mexican boundary near Calexico to the Oregon state line near Hilt via the San Joaquin and Sacramento Valleys, the Shasta River Canyon, and the Cities of Los Angeles and Sacramento.

259. From the expressway described in Section 257 near San Bruno to the Nevada state line near Verdi via San Francisco and Sacramento.

260. From San Diego to the Arizona state line near Yuma.

261. From San Diego to the Nevada state line near Calada via Cajon Pass.

262. From expressway route described in Section 258 near Indio to the Arizona state line near Blythe.

263. From the expressway route described in Section 261 near Barstow to the Arizona state line near Needles.

264. From the expressway route described in Section 257 near San Jose to the expressway route described in Section 259 near the distribution structure in Oakland.

265. From the expressway route described in Section 264 near Hayward to the expressway route described in Section 258 near Modesto.

266. From the expressway route described in Section 259 near Vacaville to the expressway route described in Section 258 near Dunnigan.

267. From the expressway route described in Section 258 near Stockton to the expressway route described in Section 265 near Tracy.

268. The Harbor Expressway is from Hollywood Expressway to San Pedro.

269. The Arroyo Seco Expressway is from Hollywood Expressway to Pasadena.

270. The Sepulveda Expressway is from the expressway route described in Section 257 to the Los Angeles River Expressway.

271. The Santa Monica Expressway is from State Route 60 near Santa Monica to the Hollywood Expressway.

272. The Inglewood Expressway is from State Route 60 El Segundo to the Harbor Expressway.

273. The Olympic Expressway is from State Route 60 near Venice to the Santa Ana Expressway.

274. The East Bypass Expressway is from Harbor Expressway to the Arroyo Seco Expressway.

275. The Los Angeles River Expressway is from the Santa Ana Expressway to Long Beach and from the expressway route described in Section 258 to the Hollywood Expressway.

276. The expressways described in Sections 268 to 275, inclusive, are in the Los Angeles metropolitan area.

277. The Alemany Expressway is from the expressway route described in Section 257 near the south boundary of San Francisco to the expressway route described in Section 259 in San Francisco.

278. An expressway from the expressway described in Section 257 near the Golden Gate Bridge to the expressway route described in Section 259 near the San Francisco-Oakland Bay Bridge.

279. The Twin Peaks Expressway is from the expressway route described in Section 257 near Sloat Boulevard to the expressway route described in Section 259 near Division Street.

280. The MacArthur Expressway is from the expressway route described in Section 259 near the distribution structure in Oakland to the expressway route described in Section 265 near Hayward.

281. The Walnut Creek Expressway is from the City of Alameda near Santa Clara Avenue to Walnut Creek via the Low Level Tunnel.

282. The Tunnel Road Expressway is from the expressway route described in Section 259 near Folger Avenue to Walnut Creek Expressway.

283. The Mountain Boulevard Expressway is from Walnut Creek Expressway to MacArthur Expressway near San Leandro.

284. The expressway described in Sections 277 to 283, inclusive, are in the San Francisco-Oakland and San Jose metropolitan areas.

285. The term "metropolitan areas" means the respective metropolitan areas as shown by the United States Bureau of the Census in the decennial census of 1940.

286. The highways in the expressways system shall be state highways for all purposes under the provisions of this code and any other statute of this State.

287. The commission and every city and county are hereby authorized to enter into cooperative agreements whereby any revenues available for expenditure on state or county highways or city streets may be allocated to and expended upon any expressway route either within or outside such city or county.

288. The department shall acquire the necessary rights of way for, and shall design, construct and maintain the system of state and metropolitan expressways as described herein and for such purposes shall exercise all of the powers and duties vested in the department by this code or any other statute relating to the state highways within this State.

289. The department may delegate any expenditure of moneys allocated for express highways to any city within which any such highway is located, as in cases of other expenditures on state highways within cities.

290. In the expenditure of funds upon expressway routes, the department shall so far as practicable give priority in the expenditure of such funds for the purpose of acquiring the necessary rights of way, including the purchase or condemnation of the rights of ingress and egress of owners of abutting property in order that the limited access right of way for each project shall be acquired and assured prior to the expenditure upon any such project on any such expressway route of funds for the construction or improvement thereof.

291. The commission and the department, in respect to any expressway route provided for in this chapter, shall have authority to provide for the elimination of intersections at grade of an expressway route with any existing state or county highway or city street, either by grade separations or by providing service roads adjacent to the expressway, or by closing off such highways or streets at or near the right of way boundary line of the expressway.

292. The commission in exercising the powers as provided in this section shall not have authority to impose any liability on any city or county to pay any portion of the costs or for damages except by an agreement between the said state agencies and such city or county. No state or county highway or city street shall be opened into or connected with any expressway route designated as herein provided without the consent and previous approval expressed by resolution adopted by the commission, and after the completion of any portion of an expressway route no highway or street which is not a part of an expressway facility shall intersect the same at grade.

293. From and after the establishment of any road or highway as an express highway as provided in this chapter, no abutters' rights or easements of access, light, air or view shall arise therein. All existing abutters' rights in any existing highway declared to be an expressway shall be acquired by the department insofar as practical and necessary to accomplish the purposes of this chapter. Where land is conveyed or acquired by condemnation for right of way for an express highway, owners of land abutting thereon shall have only such rights therein as may be specifically reserved in the deed, judgment, or other instrument conveying title to the right of way.

294. An express highway shall be so designed and constructed as to incorporate such basic engineering features and facilities as will best serve the traffic for which the expressway is intended. Every such expressway shall be so designed or located as to avoid so far as is practicable, with due regard for public investment in existing highways, interference with access between any existing rail facility and contiguous or adjacent property which is used, developed or zoned for industrial purposes.

295. The department, in determining the design of an express highway and having regard to the location thereof and the traffic conditions then existing or anticipated, shall give consideration to the following basic features, any or all of which may be incorporated when determined by the department to be appropriate and practical to accomplish the purposes of this chapter:

(1) One or more roadways for vehicular traffic so designed and constructed that vehicular traffic may enter or leave only at entrances and exits regularly established by public authority.

(2) Grade separation structures or other devices to eliminate crossings at grade of state and county highways and city streets.

(3) Physical barriers to separate opposing traffic and to prevent left turns across opposing traffic.

(4) Entrance and exit facilities which are appropriate to permit vehicles to enter and leave the highway with the least interference with through traffic.

(5) Such physical barriers as are appropriate to protect the traveled way against lateral interference and encroachments.

(6) Such additional width of roadways or turnouts as may be deemed appropriate to accommodate disabled vehicles off of the main traveled way.

(7) Such other physical features and facilities as may be developed to increase traffic safety and to facilitate traffic movement.

296. Any express highway may be so designed and constructed as to include provision for service roads adjacent to the express roadway, which service roads need not be freeways or constructed to the standard required in respect to an express highway, and to which service roads owners and occupants of abutting property may have access.

297. The department shall acquire rights of way which are adequate to permit the ultimate development of traveled ways as described herein.

298. Public motor carriers of passengers for hire shall be allowed to operate upon any and all expressways. Any such carrier must obtain a certificate of public convenience and necessity from Public Utilities Commission whenever required by law and also may be required to obtain a franchise from any city in any case in which the same may be required by law.

298.1. Any motor carrier of property may operate upon any such expressway, subject to obtaining a certificate of public convenience and necessity from the Public Utilities Commission where required by law, subject to such regulations as may be made by any city under Section 459 of the Vehicle Code.

298.2. The department may make regulations relative to the stopping of any carrier of passengers or property for hire for the purpose of loading or unloading of passengers and property, as may be required for public safety and convenience on such expressways, and any such carrier shall operate in accordance with such regulations, and not otherwise.

SEC. 3. Section 74 is added to the Streets and Highways Code, to read:

74. Any city or county aggrieved by any decision of the department under the provisions of Division 3 or under the provisions of Sections 194 to 202, inclusive, may, within 30 days after such decision, petition the California Highway Commission for a hearing. If a petition be filed the commission shall hear the same as soon as conveniently possible and after reasonable notice to such city or county. The commission shall make its order allowing or disallowing the petition in whole or in part and the commission's order shall be final and conclusive.

SEC. 4. Section 188 of the Streets and Highways Code is repealed and a new section to be numbered 188 is added to said code, to read:

188. Subject to the provisions hereinafter contained in this article and in Section 825 all money in the State Highway Fund expended for construction of state highways, including the acquisition of rights of any, construction, reconstruction and construction engineering, shall be allocated and expended as follows: One-third shall be allocated and expended one-half in each county group; 45 percent of the remaining two-thirds shall be allocated to and expended in County Group No. 1 and 55 percent of said remaining two-thirds shall be allocated to and expended in County Group No. 2.

SEC. 5. Section 188.2 is added to the Streets and Highways Code, to read:

188.2. It is the duty of the commission to allocate the money available for construction of state highways in each county group in substantial amounts for construction of the expressway system and for construction of other state highways, with due regard to traffic volume, improvements promoting public safety and the economic development of the State.

SEC. 6. Section 188.4 is added to the Streets and Highways Code, to read:

188.4. The commission is not required to allocate the construction moneys available as between expressways and other state highways in equal proportions in each county group but is directed to consider the particular conditions pertaining in each county group and to make such allocations for said county group as will best subserve the public interest.

SEC. 7. Section 194 of the Streets and Highways Code is amended to read:

194. The commission shall allocate annually, and the department shall expend or cause to be expended within the cities *and cities and counties* of this State, from the State Highway Fund, [an amount equal to the net revenue derived from one-quarter cent ($0.0025) per gallon of tax on motor vehicle fuel,] *the amount transferred to the State Highway Fund from the Highway Users Tax Fund* for expenditure in cities, as *provided in Section 2107.*

REASSEMBLED

At 8 p.m., the Senate reconvened.

Hon. Harold J. Powers, President pro Tempore of the Senate, presiding.

Chief Assistant Secretary Cleve V. Taylor at the desk.

MOTION FOR COMMITTEE OF THE WHOLE

Senator Collier moved that the Senate resolve itself into a Committee of the Whole for the purpose of considering further the amendments offered to Senate Bill No. 5.

Motion carried.

IN COMMITTEE OF THE WHOLE

Hon. Harold J. Powers, President pro Tempore of the Senate, presiding.

On motion of Senator Desmond, the committee did arise, and report back to the Senate.

IN SENATE

Hon. Harold J. Powers, President pro Tempore of the Senate, presiding.

Chief Assistant Secretary Cleve V. Taylor at the desk.

MOTION TO PRINT AMENDMENTS

Senator Hatfield moved that the following amendments offered to Senate Bill No. 5 be printed in the Journal:

Motion carried.

PROPOSED AMENDMENTS TO SENATE BILL NO. 5, AS AMENDED IN THE SENATE FEBRUARY 5, 1947

Amendments Offered by Senator DeLap

Amendment No. 1

On page 21 of the printed bill, as amended, between lines 15 and 16, insert

"9657. There shall be allowed as a credit against the amount of tax due from an operator under the provisions of Section 9651 or Section 9652 of this code the amounts paid by the operator for franchise, license taxes and taxes on gross receipts to any city, city and county, or county, for the privilege of, or on account of, operating its vehicles which are subject to the tax imposed by this part for and with respect to the same period of time for which the tax is due under Sections 9651 or 9652. The credit shall not include any ad valorem, real property tax, or personal property tax except as provided in this section, sales or use tax, or any tax levied by the United States. The board shall by regulation prescribe the manner in which the credit shall be allowed."

Amendments Offered by Senators Salsman and Quinn

Amendment No. 1

On page 18, line 18, of the printed bill, as amended, strike out "a fee of five dollars ($5)", and insert "an original application fee,".

Amendment No. 2

On page 18, line 20, of said bill, strike out "fee of four dollars", and insert "renewal fee".

Amendment No. 3

On page 18, line 21, of said bill, strike out "and fifty cents ($4.50)".

Amendment No. 4

On page 18 of said bill, after line 28, insert

"In the case of an application for an operator's license, the original application fee is one dollar ($1), and the renewal fee is one dollar ($1). In the case of an application for a chauffeur's license, the original application fee is five dollars ($5), and the renewal fee is four dollars and fifty cents ($4.50)."

Amendments Offered by Senators Quinn and Slater

PRINTER'S NOTE—There being no 7-point strikeout type available, the material which should appear in strikeout type in the following amendments is indicated by being enclosed within brackets.

Amendment No. 1

In line 6 of the title of the printed bill, as amended, after "195," insert "356,".

Amendment No. 2

On page 14 of said bill, between lines 42 and 43, insert

"SEC. 9.5. Section 356 of the Streets and Highways Code is amended to read:

356. Route 56 is from:

(a) Route 2 near Los Cruces via Lompoc and Guadalupe to Route 2 near Pismo.

(b) San Luis Obispo to San Francisco along the coast via Cambria, San Simeon, Carmel, and Santa Cruz.

(c) State highway near southerly end of Marin Peninsula to the Marin-Sonoma County line via the coast route.

(d) *Marin-Sonoma County line to Russian River near Jenner.*

(e) Russian River near Jenner to Westport.

([e] *f*) *Westport to Ferndale via Petrolia on the Mattole River.*

(g) Ferndale to Route 1 near Fernbridge."

Amendments Offered by Senator Quinn

Amendment No. 1

On page 9, line 37, of the printed bill, as amended, strike out "An expressway", and insert "The Lombard Street Expressway".

Amendment No. 2

On page 9, line 38, of said bill, after "Bridge", insert ", via a Lombard Street Tunnel".

Amendments Offered by Senator Rich

Amendment No. 1

In line 8 of the title of the printed bill, as amended, strike out "and 188.4", and insert "188.4 and 510".

Amendment No. 2

On page 14 of said bill, between lines 32 and 33, insert

"SEC. 8.5. Section 510 is added to the Streets and Highways Code, to read:

510. Route 210 is from Marysville to Sacramento via the most feasible and direct route."

Amendments Offered by Senator Ward

Amendment No. 1

On page 11 of the printed bill, as amended, strike lines 6 to 8, inclusive, and insert "commission."

The department and the city within which any expressway is located shall agree in writing on the type of separation of grades of any expressway and any city street before the department constructs any underpass or overpass of such city street."

Amendments Offered by Senator Collier

Amendment No. 1

On page 34 of the printed bill, as amended, between lines 3 and 4, insert

"SEC. 41.5. If any provision of this act, or the application thereof to any person or circumstance is held invalid, the remainder of the act, or the application of such provision to other persons or circumstances, shall not be affected thereby."

ADJOURNMENT

At 11.40 p.m., on motion of Senator Breed, the President declared the Senate adjourned until 10 a.m., Friday, March 7, 1947, out of respect to the memory of the late Ruben S. Schmidt.

JOHN F. LEA, Minute Clerk

Amendment No. 40

On page 16 of said bill, strike out lines 47 to 51, inclusive.

Amendment No. 41

On page 17, line 28, of said bill, strike out "distribution", and insert "distributors".

Amendment No. 42

On page 18, line 13, of said bill, following "September", insert "15".

Amendment No. 43

On page 18, line 30, of said bill, preceding "include", insert "as used in this section".

Amendment No. 44

On page 32, line 1, of said bill, strike out "3", and insert "37.5".

Amendment No. 45

On page 33, line 18, of said bill, strike out "and 37", and insert "37 and 37.5".

Amendment No. 46

On page 33, line 23, of said bill, strike out "and 37", and insert "37, and 37.5".

Amendment No. 47

On page 33, line 47, of said bill, after "in", insert "and thereafter received in".

Amendment No. 48

On page 34, line 3, of said bill, following "Fund", and preceding the period, insert ", and the Controller shall make the transfers to the Highway Users Tax Fund at the same time as transfers to said fund of moneys received under the Motor Vehicle Fuel License Tax Law are made".

Amendment No. 49

On page 34 of said bill, after line 6, insert

"SEC. 43. This act shall be known and may be cited as the Public Roads Act of 1947."

Amendments by Senators Hatfield and Hulse

Amendment No. 1

In line 3 of the title of the printed bill, as amended, after "therefor," insert "and relating to vehicles thereon".

Amendment No. 2

In line 10 of the title of said bill, after "Sections", insert "142,".

PRINTER'S NOTE—There being no 7-point strikeout type available, the material which should appear in strikeout type in the following amendments is indicated by being enclosed within brackets.

Amendment No. 3

On page 17 of said bill, between lines 44 and 45, insert

"SEC. 31.5. Section 142 of the Vehicle Code is amended to read:

142. Exemption from Registration. The registration provisions of this chapter shall not apply to any of the following vehicles:

(a) Any vehicle of a type otherwise subject to registration hereunder which is driven or moved upon a highway in conformance with the provisions of this code relating to dealers, transporters or nonresidents or under a temporary registration permit issued by the department as authorized by Section 147 hereof.

(b) Any vehicle of a type otherwise subject to registration hereunder which is driven or moved upon a highway only for the purpose of crossing such highway from one property to another in accordance with a permit issued by the Department of Public Works.

(c) Any implement of husbandry, whether of a type otherwise subject to registration hereunder or not, which is only incidentally operated or moved over a highway. *The following shall be deemed to be implements of husbandry:*

(1) A lift-carrier designed and used exclusively for the lifting and carrying of implements of husbandry, when operated or moved upon a highway [, shall be deemed to be an implement of husbandry].

(2) A two-wheeled trailer having no bed, and designed and used solely for transporting a hay loader.

(3) A spray rig designed and used exclusively for spraying in the conduct of agricultural operations.

(4) A nurse rig or equipment auxiliary to the use of a spray rig.

(5) A row duster.

(d) Special mobile equipment.

(e) Any self-propelled wheel chair or invalid tricycle.

(f) Special highway construction equipment.

The foregoing list shall be deemed as illustrating and not a list of limitations.".

Amendment No. 4

On page 19, line 4, of said bill, strike out "14,000", and insert "16,000".

Amendment No. 5

On page 19, line 6, of said bill, strike out "14,000", and insert "16,000".

Amendment No. 6

On page 19 of said bill, between lines 10 and 11, insert

"9603.5. "Vehicle" does not include the following:

(a) A lift carrier designed and used exclusively for the lifting and carrying of implements of husbandry, when operated or moved on a highway.

(b) A carry-all as defined in Section 372.3 of the Vehicle Code, used solely for agricultural purposes, the use of which on any highway is limited to traveling from one place of agricultural work to another, unladen.

(c) A farm tractor or any motor vehicle designed and used primarily for drawing plows, mowing machines and other implements of husbandry.

(d) A wagon or van used exclusively for carrying products of farming from one part of a farm to another part thereof, or from one farm to another farm, and used solely for agricultural purposes, including any van used in harvesting alfalfa, which is only incidentally operated or moved on a highway as a trailer.

(e) A wagon or portable house on wheels used solely by shepherds as a permanent residence in connection with sheep-raising operations and moved from one part of a ranch to another part thereof or from one ranch to another ranch, which is only incidentally operated or moved on a highway as a trailer."

Amendment No. 7

On page 20 of said bill, strike out lines 5 and 6.

Amendment No. 8

On page 20 of said bill, strike out lines 27 and 28.

Amendment No. 9

On page 32 of said bill, between lines 34 and 35, insert

"14,001 to 15,000 lbs.---------- 58.00
15,001 to 16,000 lbs.---------- 64.00"

Amendment No. 10

On page 33, line 12, of said bill, strike out "14,000", and insert "16,000".

Amendments by Senator Dilworth

Amendment No. 1

On page 8, line 47, of the printed bill, after "via", insert "Box Springs and".

Amendments by Senator Mayo

Amendment No. 1

On page 13 of said bill, as amended, strike out lines 33 to 37, inclusive, and insert "sion for February 5, 1947, during each of the five year periods commencing and ending respectively July 1, 1947 to June 30, 1952, July 1, 1952 to June 30, 1957, and July 1, 1957 to June 30, 1962.

In the event that the department expends for construction and acquisition of rights of way in any county during any of said five year periods a larger sum than required by the preceding paragraph the excess may be credited against the required expenditure for a subsequent five year period."

Amendments by Senator Collier

Amendment No. 1

On page 9, line 37, of the printed bill, as amended, strike out "An expressway" and insert:

"The Lombard Street expressway"

Amendment No. 2

On page 9, line 38, of said bill, after "Bridge" insert:

", via a Lombard Street tunnel"

Amendment No. 3

On page 11, line 33 of said bill, strike out "may" and insert:

"shall"

Amendment No. 2

On page 15 of the said bill, strike out lines 1 to 21, inclusive.

Proposed Amendment to Senate Bill No. 5 by Mr. Beck

Amendment No. 1

On page 9, line 39, of the printed bill, as amended in the Assembly on April 3, 1947, after the first comma, strike out "Stockton, and Sacramento.", and insert "Glendale, Burbank, San Fernando, Bakersfield, Delano, Tulare, Kingsburg, Selma, Fresno, Madera, Chowchilla, Merced, Turlock, Modesto, Manteca, Stockton, Lodi, and Sacramento".

Proposed Amendments to Senate Bill No. 5 by Mr. James

Amendment No. 1

In lines 4 and 5 of the title of the printed bill, as amended in the Assembly on April 3, 1947, strike out "Article 2 of Chapter 2 of Division 1 and".

Amendment No. 2

In line 6 of the title of said bill, strike out "232,".

Amendment No. 3

In line 7 of the title of said bill, strike out "300,".

Amendment No. 4

On page 8 of said bill, strike out lines 48 to 50, inclusive; strike out all of pages 9 and 10; and on page 11, strike out lines 1 to 6, inclusive, and insert

"SEC. 2. Article 2A is added to Chapter 2 of Division 1 of the Streets and Highways Code, to read:

Article 2A. The State Expressways

252. The terms "express highway," "expressway," and "freeway" shall be synonymous and interchangeable and all of the statutes of this State applicable to freeways shall, unless inconsistent with any of the provisions of this chapter, be applicable to the expressway system of highways described or provided for in this article.

253. Nothing in this article shall be deemed to prevent the commission or the department from acquiring rights of way for or constructing any other state highway as an expressway or freeway or declaring any state highway to be a freeway as authorized under any of the provisions of this code or any other statute.

254. The state network of expressway routes is described in Sections 255 to 264, inclusive.

255. The Hollywood Expressway is from State Highway Route 165 to Cahuenga Pass.

256. The Santa Ana Expressway is from the Hollywood Expressway to Santa Ana.

257. The Harbor Expressway is from the Hollywood Expressway to San Pedro.

258. The Arroyo Seco Expressway is from the Hollywood Expressway to Pasadena.

259. The Santa Monica Expressway is from State Route 60 near Santa Monica to the Hollywood Expressway.

260. The Olympic Expressway is from State Route 60 near Venice to the Santa Ana Expressway.

261. The Lombard Street Expressway is from a point near the San Francisco approach to the Golden Gate Bridge, via Lombard Street tunnel to a point near the San Francisco approach to the San Francisco-Oakland Bay Bridge.

262. The MacArthur Expressway is from State Route 14 near the distribution structure in Oakland to State Route 5 near Hayward.

263. The Transbay Expressway is from State Route 2 near San Bruno to State Route 14 at Crockett.

264. The Tunnel Road Expressway is from the Transbay Expressway near Folger Avenue to Route 75.

265. The expressway routes described in Sections 257, 258, 262, and 264 are added to the State Highway System as state highway routes."

Amendment No. 5

On page 17 of said bill, strike out lines 1 to 8, inclusive.

Amendment No. 6

On page 17, line 9, of said bill, strike out "232".

MOTION TO SET SPECIAL ORDER

Messrs. Burns and Dickey moved that Senate Bill No. 5, with all amendments, be made a special order of business for Monday, April 7, 1947, at 10.30 a.m.

Motion carried.

REQUEST FOR UNANIMOUS CONSENT THAT ELEVENTH TRANSCRIPT RELATIVE TO STATE HIGHWAY SYSTEM BE ORDERED PRINTED IN JOURNAL

Mr. Hollibaugh asked for, and was granted, unanimous consent that the following eleventh transcript, taken at a hearing before the Committee on Revenue and Taxation, on the California State Highway System, be ordered printed in the Journal, in 10-point type:

HEARING BEFORE THE COMMITTEE ON REVENUE AND TAXATION ON THE CALIFORNIA STATE HIGHWAY SYSTEM

VOLUME XII

Assembly Chamber, State Capitol
Sacramento, California

Wednesday, March 19, 1947, 2.30 p.m.

CHAIRMAN HOLLIBAUGH: The meeting will now come to order. I will now call the roll for the Assembly Revenue and Taxation Committee.

(Thereupon the roll was called.)

There is a quorum present, so we will proceed to hold hearing on Senate Bill No. 5. Senator Collier, you may proceed.

SENATOR COLLIER: Mr. Chairman and gentlemen of the committee, the first witness that I would like to put on this afternoon is Mr. Dixwell Pierce, the Secretary of the Board of Equalization. We are asking Mr. Pierce because they administer the 3 percent gross receipts, to give some testimony as to the question of administration of the vehicle mileage tax that the staff and the committee developed. With that introduction I will ask Mr. Pierce to proceed.

MR. PIERCE: Mr. Chairman and members of the committee, as Senator Collier has explained the State Board of Equalization is the administrative agency for the 3 percent gross receipts tax, and so when the joint committee of which he was chairman was giving consideration to the possibility of a substitution of some of their methods of taxation, inquiry was made of our office as to the administrative feasibility of the mileage tax. On October 23d, the joint committee inquired of the Board of Equalization on this as follows: "the committee has under consideration, among other things, recommendations which would in effect substitute a truck-mileage tax for the existing gross receipts tax and weight fee. In deciding whether or not to recommend the adoption of such a tax, the question of administrative feasibility naturally arises.

Amendment No. 3

In line 7 of the title of said bill, strike out "300,".

Amendment No. 4

On page 8 of said bill, strike out lines 48 to 50, inclusive; strike out all of pages 9 and 10; and on page 11, strike out lines 1 to 6, inclusive, and insert

"SEC. 2. Article 2A is added to Chapter 2 of Division 1 of the Streets and Highway Code, to read:

Article 2A. The State Expressways

252. The terms "express highway," "expressway," and "freeway" shall be synonymous and interchangeable and all of the statutes of this State applicable to freeways shall, unless inconsistent with any of the provisions of this chapter, be applicable to the expressway system of highways described or provided for in this article.

253. Nothing in this article shall be deemed to prevent the commission or the department from acquiring rights of way for or constructing any other state highway as an expressway or freeway or declaring any state highway to be a freeway as authorized under any of the provisions of this code or any other statute.

254. The state network of expressway routes is described in Sections 255 to 264, inclusive.

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264. The Tunnel Road Expressway is from the Transbay Expressway near Folger Avenue to Route 75.

265. The expressway routes described in Sections 257, 258, 262, and 264 are added to the State Highway System as state highway routes."

Amendment No. 5

On page 17 of said bill, strike out lines 1 to 8, inclusive.

Amendment No. 6

On page 17, line 9, of said bill, strike out "232".

Amendments read.

The roll was called, and the amendments refused adoption by the following vote:

AYES—Brady, Butters, Clarke, Cooke, Crowley, Lester T. Davis, Ralph C. Dills, Geddes, Heisinger, James, Lowrey, Robertson, Silliman, Stephenson, Thorp, and Mr. Speaker—16.

NOES—Bennett, Berry, Blosser, Burke, Caldecott, Collier, George D. Collins, Conrad, Cramer, M. Philip Davis, Debs, Dickey, Dolwig, Doyle, Erwin, Evans, Field, Fletcher, Grant, Grunsky, Hahn, Hawkins, Hinckley, Hinton, Hollibaugh, Huyck, Kilpatrick, Kirkwood, Luckel, Lyons, Maloney, McCollister, McMillan, Nichouse, O'Day, Price, Rosenthal, Sherwin, Stanley, Stewart, Thomas, Thurman, Waters, Weber, and Wollenberg—45.

Consideration of Further Amendments to Senate Bill No. 5

Motion to Amend

Mr. Stewart moved the adoption of the following amendment:

Amendment No. 1

On page 6, line 24, of the printed bill, as amended in the Assembly on April 3, 1947, after "under", insert "Sections 2104, 2110, and".

Amendment read.

The roll was called, and the amendment refused adoption by the following vote:

AYES—Beck, Bennett, Burke, Caldecott, Collier, Conrad, Cramer, M. Philip Davis, Debs, Dickey, Ralph C. Dills, Erwin, Field, Fletcher, Geddes, Hahn, Hinton, Huyck, Kilpatrick, Luckel, Lyons, Maloney, McMillan, Nichouse, Stewart, Thomas, Waters, and Mr. Speaker—28.

NOES—Berry, Blosser, Brady, Butters, Clarke, George D. Collins, Cooke, Crowley, Lester T. Davis, Dolwig, Evans, Grant, Grunsky, Heisinger, Hinckley, James, Kirkwood, Lowrey, McCollister, O'Day, Price, Sherwin, Silliman, Stanley, Stephenson, Thorp, Thurman, Weber, and Wollenberg—29.

Consideration of Further Amendments to Senate Bill No. 5

Motion to Amend

Mr. Wollenberg moved the adoption of the following amendment:

Amendment No. 1

On page 12, line 25, of the printed bill, as amended in the Assembly on April 3, 1947, following the period after "section", insert "This section does not require the department to pay any portion of such cost of removal or relocation in any case in which such person has by franchise, permit or other contract assumed any contractual obligation to remove or relocate at his own expense any such utility service structure from or in such street or highway. Nothing in this section is intended to relieve any such person from the obligations of any such contract."

Amendment read.

Point of Order

Mr. Dickey arose to the following point of order: That Mr. Wollenberg's amendment is not in order because it nullifies an amendment previously adopted.

Ruling by Speaker

Speaker Collins ruled the point of order not well taken, as the amendment modifies rather than nullifies.

The question being on the adoption of the amendment offered by Mr. Wollenberg to Senate Bill No. 5.

Demand for Previous Question

Messrs. Clayton A. Dills, Lowrey, Robertson, Waters, and McMillan demanded the previous question.

Demand for previous question sustained.

The question being on the adoption of the amendment offered by Mr. Wollenberg to Senate Bill No. 5.

The roll was called, and the amendment refused adoption by the following vote:

AYES—Berry, George D. Collins, Hinckley, Hinton, Maloney, Robertson, Thurman, and Wollenberg—8.

NOES—Anderson, Beck, Bennett, Blosser, Brady, Burke, Butters, Clarke, Collier, Conrad, Cramer, Crowley, Lester T. Davis, M. Philip Davis, Debs, Dickey, Clayton A. Dills, Ralph C. Dills, Dolwig, Doyle, Erwin, Evans, Field, Fletcher, Geddes, Grant, Grunsky, Hahn, Hawkins, Heisinger, Hollibaugh, Huyck, James, Kilpatrick, Lowrey, Luckel, Lyons, McCollister, McMillan, Nichouse, Rosenthal, Silliman, Stanley, Stephenson, Stewart, Thomas, Thorp, Waters, Weber, and Mr. Speaker—50.

Consideration of Further Amendments to Senate Bill No. 5

Motion to Amend

Mr. Beck moved the adoption of the following amendments:

Amendment No. 1

Strike out the title of the printed bill, as amended in the Assembly on April 3, 1947, and insert

"An act to provide for a System of Public Streets and Highways in this State and for the financial support thereof."

Division 3 of Title 2 of the Government Code. In the case of any inconsistency, the provisions of this section shall control.

Changes or modifications

All changes or modifications in the budget shall be by vote of the commission, approved by the Director of Finance where required by this section.

Funds may be transferred from Item (e), Contingencies, to other items by vote of the commission, but no increase or decrease shall be otherwise made in any of Items (a) to (g), inclusive, of said budget without the approval of the Director of Finance. No project shown under Item (c) shall be eliminated and no new project shall be added to Item (c) of the budget without the approval of the Director of Finance. If it is necessary to eliminate or postpone any project shown under Item (c) to meet an emergency caused by floods, earthquake or other like cause or on account of decreased revenue or on account of increased costs on other work, the commission may eliminate or postpone such project upon the written approval of the Director of Finance.

In the event, during an annual period, the budgetary amount approved and allocated by the commission for any purpose exceeds the amount actually necessary therefor, with a resultant available surplus, such surplus may be allocated by the commission to any other purpose or supplemental project upon the written approval of the Director of Finance.

Administration of budget

In administering said budget, the Director of Finance shall not limit expenditures or incurrence of obligations thereunder to quarterly, semiannual or other periods of the fiscal year and shall not require any greater detail than that specified in this section and in Section 143.2.

Contracts for major construction and improvement projects shown in said budget under Item (c) may be awarded on and after the first day of April preceding the beginning of the fiscal year.

The State Controller shall account in his books all receipts and expenditures in the State Highway Fund in accordance with the classification prescribed in this section.

For the purpose of recording by the Controller of receipts to and expenditures from the State Highway Fund, the department shall furnish to the Controller with claims and remittances or by subsequent reports the information necessary to maintain such accounts.

SEC. 1.8. Section 143.2 is added to the Streets and Highways Code, to read:

Statement of revenues, expenditures, etc.

143.2. Commencing with the report submitted pursuant to Section 143.1, preceding the 1949 session of the Legislature and in each subsequent report, the commission shall also prepare for inclusion, and the department shall also include, in said report a statement of actual State Highway Fund revenues and revenues available from any other source and estimated regular federal aid for highway purposes received during the current and next preceding fiscal years, together with a statement of all expenditures made and obligations incurred during

the current and next preceding fiscal years for the construction, improvement, and maintenance of the various highways or portions thereof under the jurisdiction of the department under the following headings and subheadings:

(a) Administration, including payments for services of the Division of Contracts and Rights of Way.

(1) General or central office administration.

(2) District office administration, including San Francisco-Oakland Bay Bridge.

(3) Departmental administration.

These subheadings will include administrative expenditures for bridges, testing, and the like.

(b) Maintenance.

(1) General maintenance for each highway route.

(2) Expenditures for:

(i) Safety devices and signs.

(ii) Snow removal.

(iii) Other maintenance.

(c) Major Construction and Improvement. Under this will be shown all expenditures and obligations incurred in each county group for major construction and improvement, segregating the major bridges, the route of each highway constructed or improved, the county in which located, the number of miles involved, and a description of the type of work done.

(d) Minor Improvement and Betterment. This heading will show as to each minor improvement and betterment the same information required under (c).

(e) Rights of Way. This will show the amount of money expended for the purchase of rights of way in each county group.

(f) There shall also be included in such report a statement of the reasons for any differences between actual revenues received and estimated revenues, as well as for any differences between actual expenditures and obligations incurred and those proposed to be made, in the two next preceding reports together with a statement of the reasons why any expenditures proposed to be made or obligations to be incurred in the two next preceding reports, and not made, have not been made or incurred.

In addition to making such report to the Governor, the department shall publish or cause to be published not less than 500 copies thereof for the use of the Legislature.

SEC. 2. Section 461 of the Streets and Highways Code is amended to read:

461. Route 161 is from: Route 161

(a) Route 205 near Elysian Park in Los Angeles to a connection with Route 4 near Glendale.

(b) Route 4 near Glendale to Route 2 near Vineland Avenue.

(c) Route 4 near Glendale to Route 9 near Monrovia.

SEC. 2.2. Section 458 of the Streets and Highways Code is amended to read:

Route 158

458. Route 158 is from:

(a) Route 4 near San Fernando to Route 60 near Los Angeles Airport.

(b) Route 60 near Los Angeles Airport to a point on Route 167 near Signal Hill.

SEC. 2.3. Section 521 is added to the Streets and Highways Code, to read:

Route 221

521. Route 221 is from a point on Route 60 near Los Angeles Airport to a point on Route 165 between Santa Barbara and Slauson Avenues.

SEC. 2.4. Section 522 is added to the Streets and Highways Code, to read:

Route 222

522. Route 222 is from Route 165 near Adams Street to Route 205 near Elysian Park in Los Angeles.

SEC. 2.5. Section 523 is added to the Streets and Highways Code, to read:

Route 223

523. Route 223 from a point on Route 2 near Division Street to Route 56.

SEC. 2.6. Section 524 is added to the Streets and Highways Code, to read:

Route 224

524. Route 224 is from a point on Route 2 near the intersection of Lombard Street and Van Ness Avenue to the San Francisco-Oakland Bay Bridge approach in San Francisco.

SEC. 2.6A. Section 525 is added to the Streets and Highways Code, to read:

Route 225

525. Route 225 is a connection between Route 56 and Route 2 near the south boundary of the City and County of San Francisco.

SEC. 2.7. Section 526 is added to the Streets and Highways Code, to read:

Route 226

526. Route 226 is from a point in the vicinity of the intersection of Webster Street and Santa Clara Avenue in Alameda to a point on Route 5 in Oakland.

SEC. 2.7A. Section 467 of the Streets and Highways Code is amended to read:

Route 167

467. Route 167 is from:

(a) Long Beach to Route 166.

(b) (a) above, near Los Angeles River to Route 26 via Atlantic Boulevard.

SEC. 2.8. Section 527 is added to the Streets and Highways Code, to read:

Route 227

527. Route 227 is a connection between Route 75 near Lake Temescal in Oakland and Route 5 near San Leandro.

SEC. 2.8A. Section 528 is added to the Streets and Highways Code, to read:

Route 228

528. Route 228 is a connection between Route 5 and Route 69 near San Lorenzo.

SEC. 2.8B. Section 529 is added to the Streets and Highways Code, to read:

Route 229

529. Route 229 is a connection between Route 68 and Route 2 near San Bruno.

SEC. 2.8C. Section 600 is added to the Streets and Highways Code, to read:

State Highway Fund: Allocation and expenditure of moneys

600. The commission and the department, in the allocation and expenditure of moneys from the State Highway Fund, for construction on any route or portion of a route in any county, which route or portion of a route was added to the State Highway System by the act adding this section shall, until the commission makes the finding hereinafter specified, be limited to those moneys which, under the provisions of Section 188.4, are required as a minimum expenditure for such county during each five-year period specified in Section 188.4. This limitation shall apply in respect to expenditures for construction on such added routes or portions of routes in each county in each county group until the commission makes a finding as to any county group that all of the deficiencies listed in the report printed in the Senate Journal of this session of June 19, 1947, in such county group have been corrected.

SEC. 2.9. Article 2.5 is added to Chapter 3 of Division 1 of the Streets and Highways Code, to read:

Article 2.5. Special Provisions re Utilities in Freeways

"Person"

700. (a) "Person," in addition to the definition in Section 19, includes any city, county, public corporation, or public district.

"Utility facility"

(b) "Utility facility" means any pole, pole line, pipe, pipe line, conduit, cable, aqueduct, or other structure or appurtenance thereof used for public or privately owned utility services or used by any mutual organization supplying water or telephone service to its members.

"Utility"

(c) "Utility" means any person maintaining any utility facility.

Application of article

701. The provisions of this article are limited to state highways which are or shall become freeways. The provisions of Article 2, except as inconsistent with the provisions of this article, apply to freeways.

Cost of removal and relocation

702. Whenever the department requires any utility to remove any utility facility lawfully maintained in the right of way of any freeway to a location entirely outside the freeway right of way, the department shall pay the reasonable and necessary cost of such removal. This includes both the cost of removal and the cost of relocation in a new location outside of the freeway right of way.

This section does not apply to the relocation of the utility facility from one point in a freeway to another point in the freeway, including the relocation in any service road or outer highway of the freeway or from one point of crossing of the freeway to another and reasonable point of crossing.

Same

703. Whenever the department requires a publicly owned utility to relocate within a freeway any utility facility lawfully maintained in any freeway which was not a state highway at the time such utility facility was originally installed therein, the department shall pay the cost of such relocation.

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TRAFFIC, TRANSIT AND THOROUGHFARE IMPROVEMENTS

for

SAN FRANCISCO

A report to the Mayor's Administrative Transportation Planning Council on traffic and transit improvements, including projects to be included in proposed bond issues.

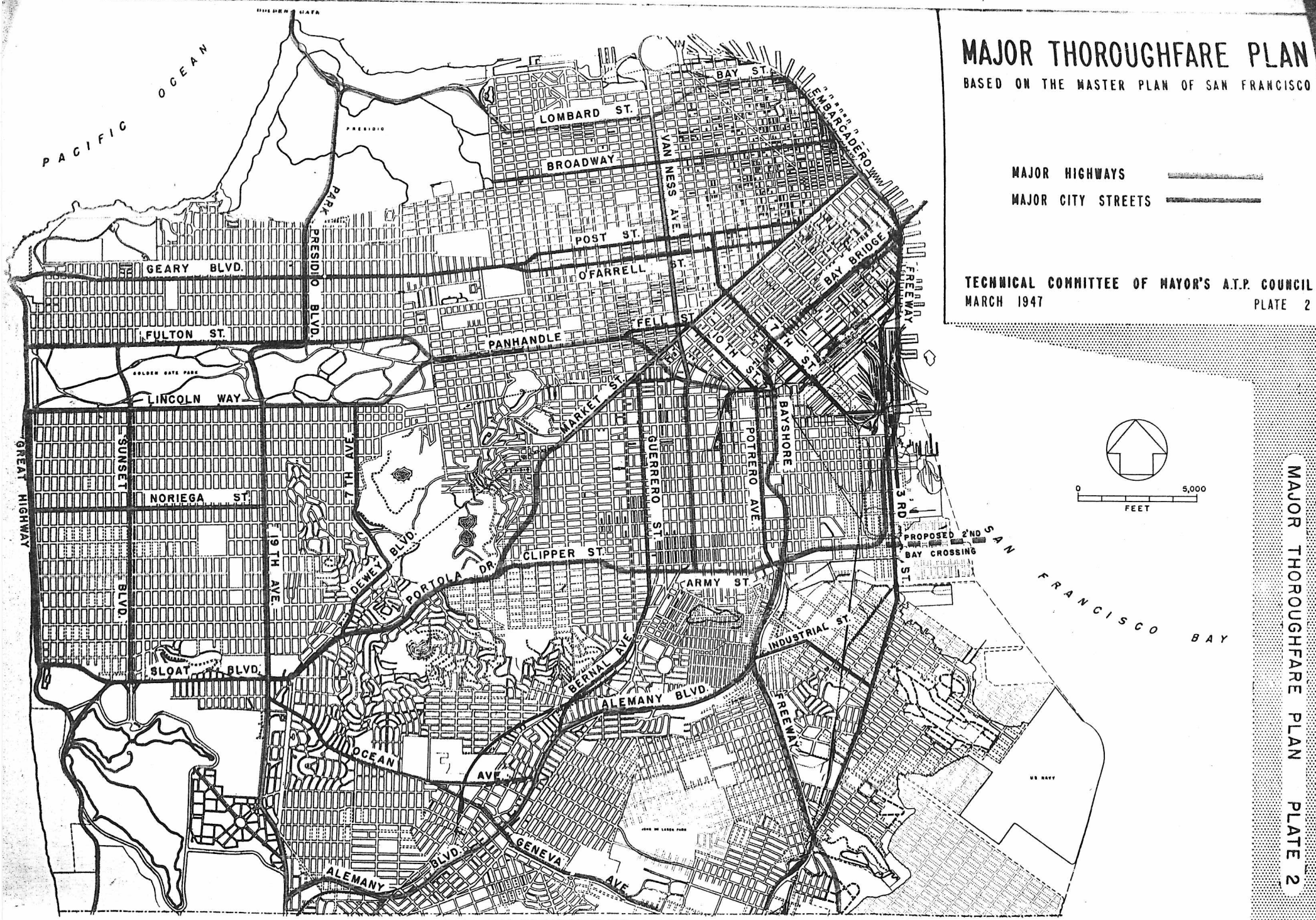
REDEVELOPMENT AGENCY
Of the City and County of San Francisco

Prepared by the Technical Committee of the Council:

J. H. Turner, Manager of Utilities, Chairman
H. C. Vensano, Director of Public Works
T. J. Kent, Jr., Director of Planning
M. Riordan, Deputy Chief of Police

City and County of San Francisco

March, 1947



MAJOR THOROUGHFARE PLAN

BASED ON THE MASTER PLAN OF SAN FRANCISCO

MAJOR HIGHWAYS

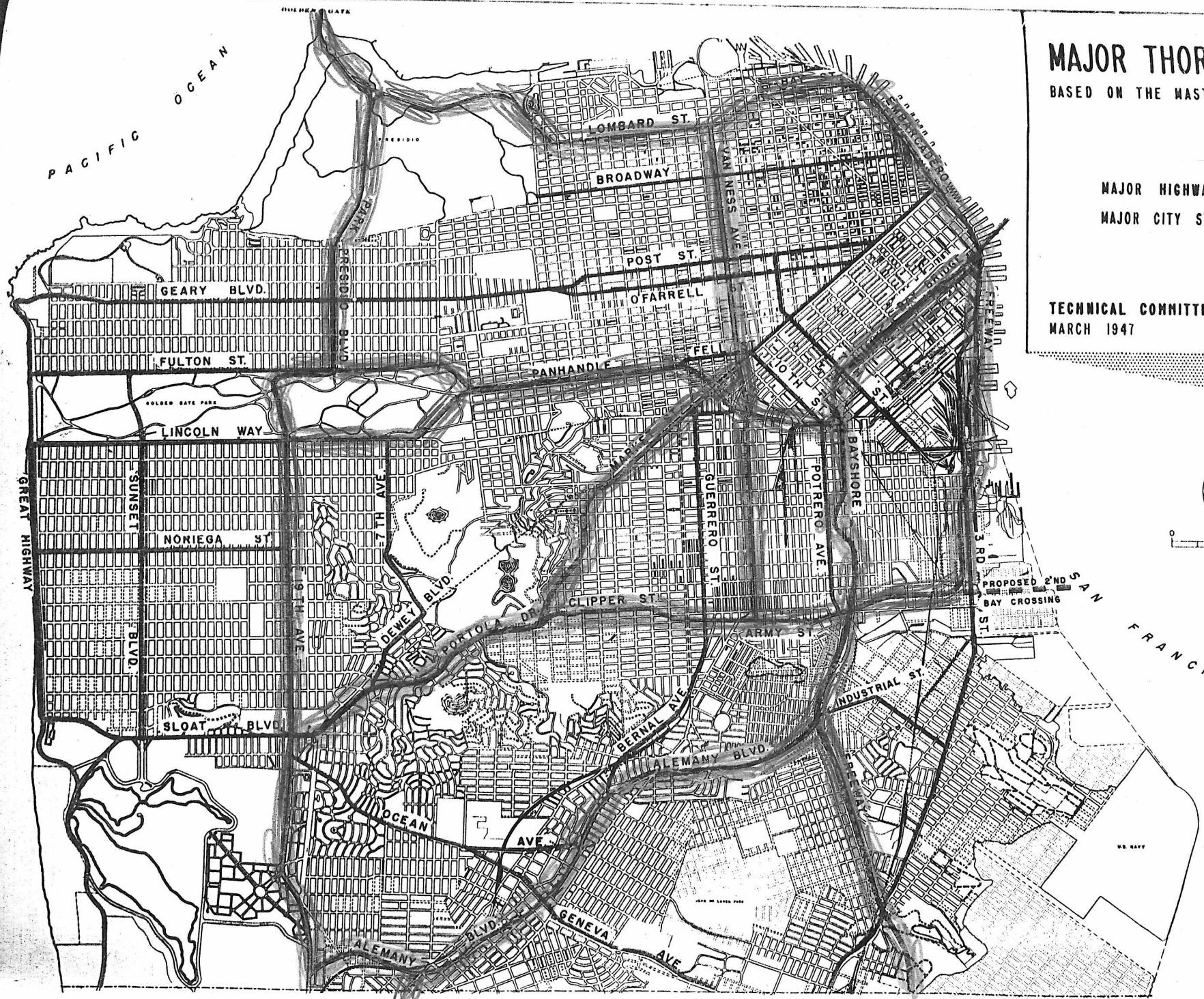
MAJOR CITY STREETS

TECHNICAL COMMITTEE OF MAYOR'S A.T.P. COUNCIL

MARCH 1947

PLATE 2

MAJOR THOROUGHFARE PLAN PLATE 2



MAJOR THOROUGHFARE PLAN

BASED ON THE MASTER PLAN OF SAN FRANCISC

MAJOR HIGHWAYS

MAJOR CITY STREETS

TECHNICAL COMMITTEE OF MAYOR'S A.T.P. COUNCI

MARCH 1947

PLATE 2

MAJOR THOROUGHFARE PLAN PLATE 2

I THE MAJOR THOROUGHFARE PLAN

A fundamental requisite for the planning and correlation of specific traffic, transit, and thoroughfare projects is a basic major thoroughfare plan.

The Major Thoroughfare Plan, upon which specific immediate project recommendations are made in other parts of this report, is shown on Plate 2. It consists of two elements: major highways, shown in red, which are designated as the desirable routes for the heaviest volumes and types of through traffic; and related major streets, shown in blue, which will serve more localized flows of heavy traffic.

The plan is the result of a careful independent study made by the Technical Committee after taking into consideration present and probable future traffic conditions including the traffic to be introduced by a second Bay crossing. It will be found that it conforms in large measure with the street and highway system embodied in the Master Plan adopted by the City Planning Commission in December, 1945.

Through Traffic Arteries

One of the basic planning and transportation principles considered by the Committee was the need, in this age of motorized transport, of thoroughfares which distinguish between, and separate, different types and modes of transportation. The Major Thoroughfare Plan shows the State Highway Routes within the City as now provided for through traffic. Under legislation now under consideration at Sacramento, funds would be provided for improvement of all of these routes to provide for additional capacity and safety. Such legislation, if adopted, will expedite the completion of the Bayshore Freeway entering the City from San Mateo County, which route is now the most heavily loaded within the City. If the additional funds proposed are made available, all improvements of the State Highway Routes will be carried out by the State Division of Highways using funds derived from an increased gas tax and other licenses and fees.

The legislation now under consideration, as embodied in Senate Bill No. 5, also provides for the incorporation of an additional 7.8 miles of highways into the State Highway System. The Technical Committee is not in complete accord with the particular routes selected for this purpose. It is recommended that the following routes should be made State Highways and financed with State Highway funds:

1) Embarcadero Freeway - Bay Bridge approach to Golden Gate Bridge approach;

2) Alemany Boulevard - San Jose Avenue to Junipero Serra Boulevard;

3) Panhandle Boulevard - Nineteenth Avenue and Park-Presidio Boulevard to Division Street ramps of Bayshore Freeway.

These routes are shown in red on the Major Thoroughfare Plan.

In order to carry out the above recommendation, it will be necessary to propose that Senate Bill No. 5 be amended by substituting the Panhandle route for the Twin Peaks route, which is now provided for in the present draft of that bill. It is not believed that the Twin Peaks route involving a freeway from Castro Street to Division Street is practicable in view of probable heavy property damage in the area south of Market Street.

Certain portions of the routes shown in red on the Major Thoroughfare Plan are now intended to provide approach facilities to the Second Bay Crossing and should be provided for and financed at the time the major financing for the crossing is arranged.

Necessary as approaches to the second Bay crossing are 1) a connection from the crossing to the Bayshore Freeway at Army Street, and 2) that portion of the Embarcadero Freeway extending from Army Street to the Embarcadero north of the Channel. The Report of the Joint Army-Navy Board on an Additional Crossing of San Francisco Bay, dated January 25, 1947, says of its recommended Army Street site that "a freeway for bringing cross-bay traffic north from Army Street, to and beyond the Southern Pacific and other railroad tracks south of Townsend Street, and dispersing it properly, should be provided."

Van Ness Avenue

Although Van Ness Avenue is shown in red because of the heavy flow of traffic which it carries, the Technical Committee does not recommend freeway construction thereon. Under the immediate program recommended in this report, street cars will be removed from that thoroughfare and will be replaced by curb-loading trolley coaches (see Section II, Part V of this report). Gas tax funds for the installation of progressively synchronized three-light traffic signals are already earmarked for Van Ness Avenue (see Section II, Part III of this report). As Van Ness Avenue naturally serves heavy volumes of intra-City traffic as well as through traffic, two other arterial routes which will serve through traffic now using Van Ness Avenue are recommended.

These routes, as previously mentioned in connection with the State Highway system, are along the Embarcadero and the Panhandle,

the latter, connecting Nineteenth Avenue and Park-Presidio Boulevard, the southern approach to the Golden Gate Bridge, via an extension of The Panhandle across Market Street to a connection with the Bayshore Freeway at Division Street and the Bay Bridge. Combined with the Embarcadero Freeway, the northern area of the City thus would be encircled by major thoroughfares consisting of two arterial routes.

The Central Business District Traffic Loop

Another of the basic principles inherent in the Plan is that private automotive vehicular traffic should not--in fact, cannot--be channeled into the Central Business District or the enlarged central district described in the Basic Assumptions in Section One, Part I of this report. It is obvious that it is utterly impossible to carry major thoroughfares into the center of the district and there terminate them. If this fact is recognized it is apparent that there must be a limit to the approach of such entering arterials. The Technical Committee recommends a loop of major thoroughfares surrounding the enlarged central district at which the approach thoroughfares would terminate. Public transit facilities must be expanded and modernized, as explained in Section I, Part II and Section II, Part V of this report, to accommodate the majority of persons entering the central district. Therefore the major thoroughfares delineated encircle, but do not enter, the expanded Central Business District. However peripheral parking areas must be provided adjacent to the major thoroughfare loop for longer-distance Bay area automotive traffic which originates beyond the reach of an improved transit system, with convenient bus service provided to furnish access from the parking terminals to areas within the central district (see Section II, Part VII of this report.)

Broadway, Van Ness Avenue, Thirteenth Street, Harrison Street, and the Embarcadero to its connection with Broadway are the designated major thoroughfares which the Technical Committee has considered as an arterial encirclement of the district within which the movement of through traffic would be discouraged. Peripheral off-street parking facilities, and, far more important, a greatly improved public transit system, must be provided to discourage the use of automobiles within the district.

An inner circle of parking garages surrounding the existing Central Business District proper should also be provided to accommodate the short-time parking needs of shoppers and others who come from all sections of the Metropolitan Bay area for the shopping, entertainment, and business services which are available in downtown San Francisco. It is the opinion of the Technical Committee that within the Central Business District proper, ultimately no parking of any vehicle other than essential service vehicles will be permitted on the streets, and within the Metropolitan Traffic District (see Section Two, Part VIII of this report) a one-hour maximum parking limit for all vehicles should be immediately put into effect.

The Market Street Problem

The problem of motorized circulation within the central district of San Francisco is greater than in most cities of comparable size for San Francisco has not just one pattern of horse-and-buggy streets, but two patterns which are unrelated to each other although adjoining in the very center of the business district. The problem caused by the joining of the two patterns at Market Street is so great that the term "The Market Street Problem" expresses the transportation problem as a whole in the inner section of the City. Any solution revolves about Market Street. With the accepted assumption of an enlarged central business district extended both north and south of Market Street, it is apparent that the present barrier that is Market Street must be broken.

The Technical Committee is convinced that there is only one solution to this problem - the provision of subsurface routes for transit vehicles in the downtown area. One of the subways would be under Market Street and would thus permit cross-Market automobile, truck and pedestrian traffic to be carried smoothly at the present surface level.

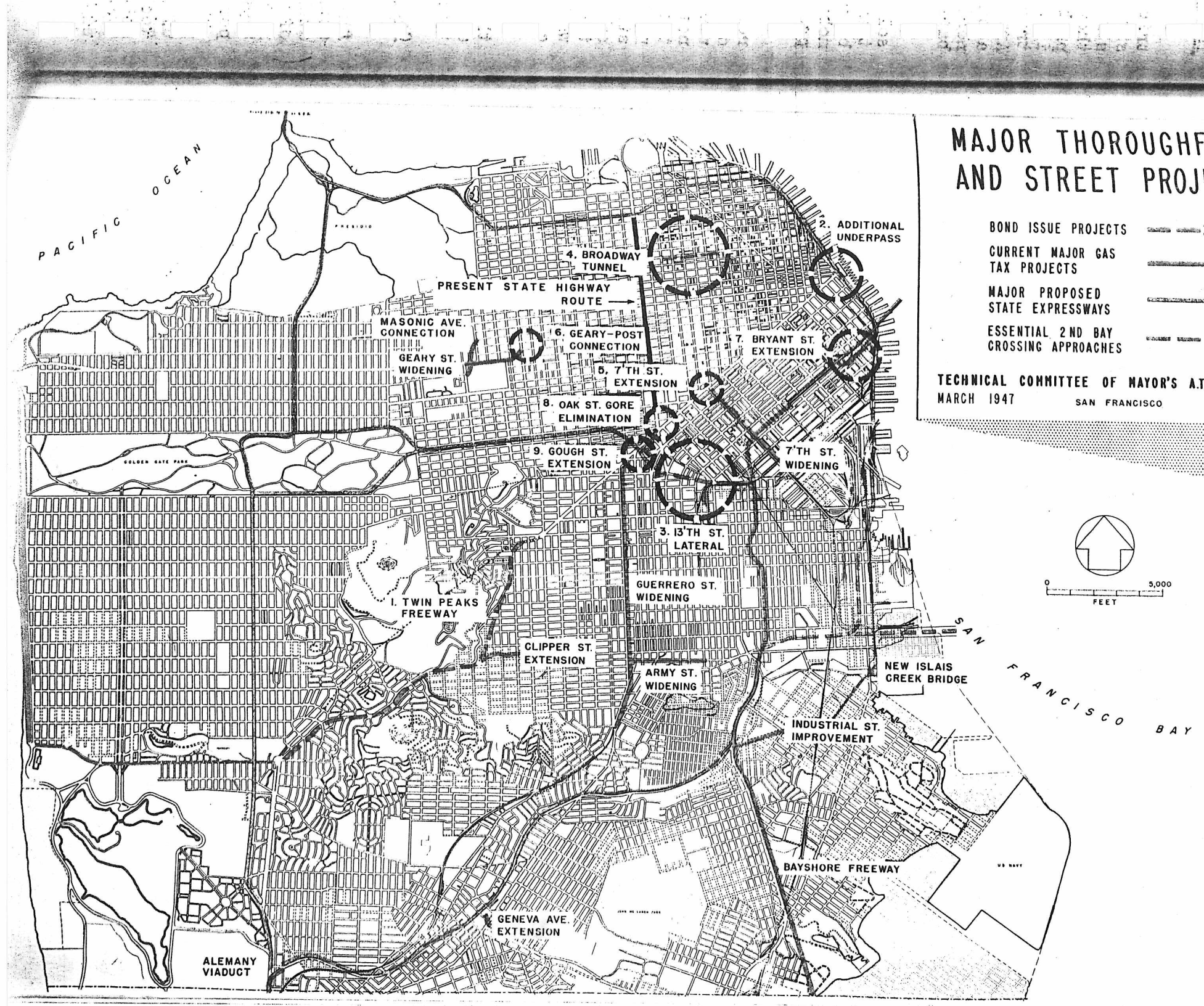
The Committee has given careful consideration to what some refer to as an "alternate solution" - the construction of a system of elevated automobile ways in the downtown area, several of which would cross Market Street - and has reached the conclusion that not only would the cost of such a "solution" be fully as great as the cost of subways in the downtown area, but it would fail completely to provide rapid mass transit since transit vehicles would still be required to make use of the existing gridiron street system. Furthermore, this theoretical "solution" would encourage the increased use of private automobiles in the downtown area which would be directly contrary to universally accepted principles of transportation planning for metropolitan centers.

For these reasons, the thinking of the Technical Committee on the entire transportation problem has been predicated on the assumption that Market Street will in the future have a subway and thus will have transit vehicles removed from its present surface.

Conclusion

It was not the intent of the Technical Committee that the final result envisioned in the Major Thoroughfare Plan would be attained by a single construction program to be completed immediately under this proposed bond issue. Because of the magnitude of the cost, and because of the probable availability of funds from the State over a ten-year period, the work necessary for its completion will be carried out in several stages as conditions permit and require.

For example, although it is probable that the Panhandle will ultimately be extended and developed as a six-lane arterial, the Technical Committee recommends as the first stage in the development of this route, the designation of Oak and Fell Streets as a pair of one-way streets with synchronized, three-light traffic signals.



MAJOR THOROUGHFARE AND STREET PROJECTS

BOND ISSUE PROJECTS

CURRENT MAJOR GAS TAX PROJECTS

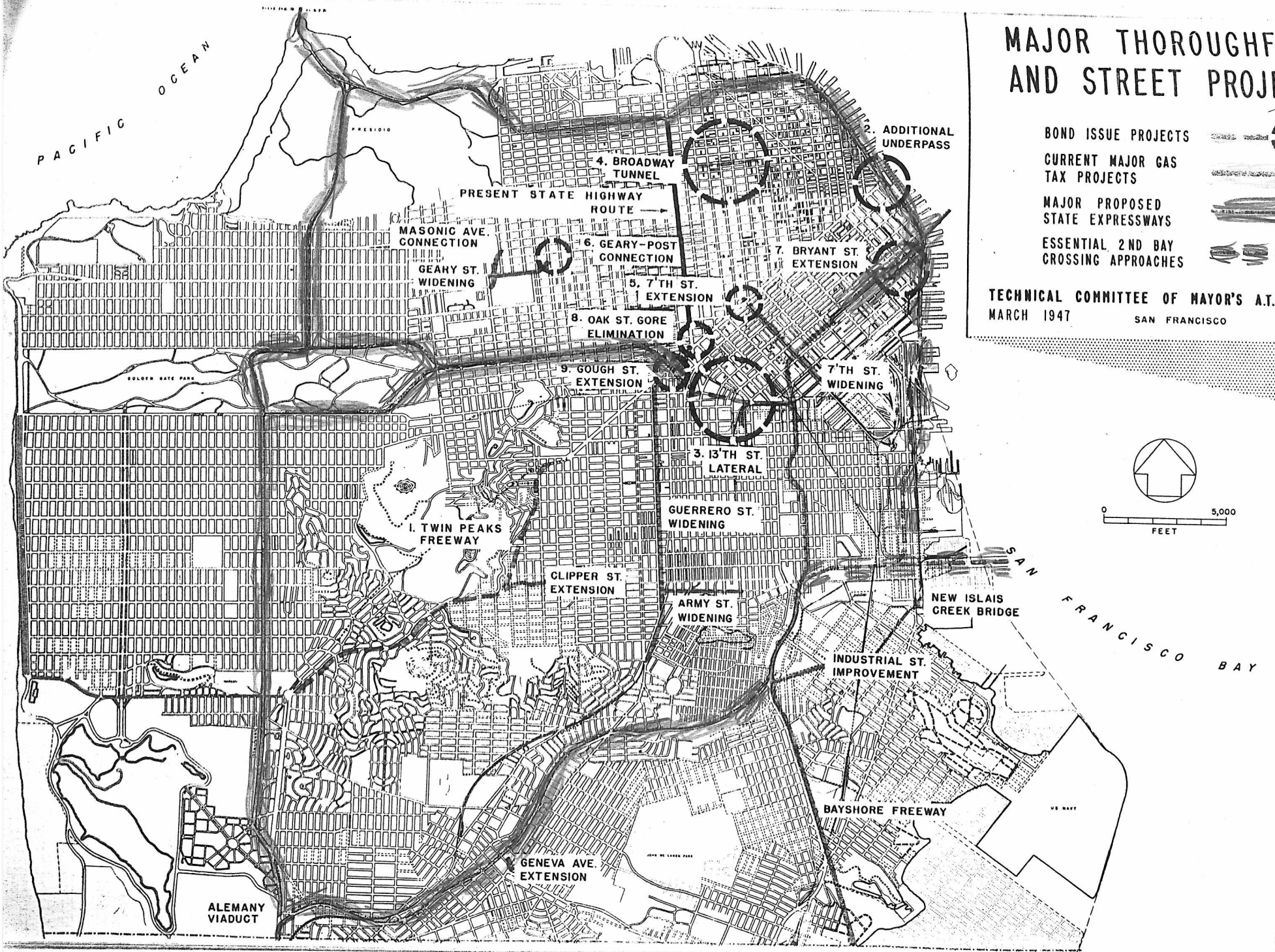
MAJOR PROPOSED STATE EXPRESSWAYS

ESSENTIAL 2ND BAY CROSSING APPROACHES

TECHNICAL COMMITTEE OF MAYOR'S A.T.P. COUNCIL

MARCH 1947 SAN FRANCISCO PLATE 3

(MAJOR THOROUGHFARE & STREET PROJECTS - PLATE 3



MAJOR THOROUGHFARE AND STREET PROJECTS

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TECHNICAL COMMITTEE OF MAYOR'S A.T.P. COUNCIL

MARCH 1947 SAN FRANCISCO PLATE 3

(MAJOR THOROUGHFARE & STREET PROJECTS - PLATE 3

II MAJOR THOROUGHFARE AND STREET PROGRAM
Project No. 1

Because most of the major highways in the Major Thoroughfare plan fit logically into the proposed system of State Highways and can thus be constructed or improved with State funds, there is only one major boulevard included in the proposals of the Technical Committee for financing at this time by the City.

Other proposals for construction at this time are for the elimination of important bottlenecks and improvements to major streets so that a smoother flow of traffic will result thereon. The total cost of this phase of the program proposed for bond issue financing is $15,235,000. A description of the projects, shown in red on Plate 3, follows.

1. Market-Portola Boulevard: $6,400,000

At present a heavily traveled route links the central district with large and still developing residential districts west and south of Twin Peaks. It is now loaded beyond safe capacity. A large amount of traffic follows other and longer routes, to reach areas better served by this route, because of the delays and hazards which it occasions.

The existing roadway of upper Market Street is narrow, the alignment is poor, and the grades are excessive. The width of the street varies from 70 to 100 feet between property lines so that for a portion of the distance four traffic lanes are available, but in the narrowest and most winding part only two lanes are ordinarily usable. Portola Drive has reasonably satisfactory alignment and grades, but only two lanes are ordinarily available for traffic.

The project proposed by the Technical Committee will provide six lanes for traffic with a dividing center strip. From Castro Street to the vicinity of O'Shaughnessy Boulevard the new thoroughfare will be constructed as a freeway providing a grade-separated, limited-access, high-speed route around Twin Peaks. West of O'Shaughnessy Boulevard the new highway will have two 41-foot roadways and a planted center strip eight feet in width, providing a six-lane, signalized thoroughfare.

2. Embarcadero Underpass at Market Street: $750,000

The existing two-lane vehicular underpass can no longer handle adequately the traffic at this point. As a part of the Major Thoroughfare Plan to encourage the flow of traffic around the Central Business District, an additional two-lane vehicular underpass on The Embarcadero at Market Street is proposed to relieve the bottleneck existing at this location. This would result in a total underpass capacity of four lanes. This project will be the first stage in the development of the Embarcadero as the ultimate route for the Freeway connecting both existing bridges.

5. Thirteenth Street Widening, including a Connection with the Bayshore Freeway: $2,000,000

A lateral to the Bayshore Freeway, this will be an important thoroughfare which will provide a direct link between major streets north and west of Market Street and the Bayshore Freeway and the Bay Bridge. The entire length of Thirteenth Street will be widened on the south side to provide a six-lane roadway. The western terminus of Thirteenth Street at Mission Street will be connected directly with Duboce Avenue which provides a wide and convenient surface route to Market Street. At the eastern end the widening will extend to Harrison Street from which point a new street and ramp will connect with the elevated structure to be built along the northerly side of Division Street by the State Division of Highways as one of the main laterals from the Bayshore Freeway.

4. Broadway Tunnel: $5,000,000

This will be a four-lane vehicular tunnel under Broadway through Russian Hill. Broadway is one of the few wide streets north of the Central Business District but is now impassable because of the extremely heavy grades on Russian Hill. The tunnel will provide two traffic lanes in each direction, and will thus provide a four-lane major street connection from The Embarcadero to Van Ness Avenue and westward into Pacific Heights. This new route will relieve congestion on Pacific Avenue, breaking the bottleneck existing on that street.

5. Seventh Street Extension Across Market Street: $375,000

Seventh Street, destined to become a major street of increasing importance in the South of Market district, now has a dead end at Market Street. It is proposed to extend the street diagonally in a northwesterly direction through one block to connect with McAllister and Leavenworth Street. This improvement will provide an additional direct crossing of Market Street and will provide for good dispersal of traffic flows both to the west and north.

6. Diagonal Street from Post Street to Geary Street: $175,000

This project is designed to break the bottleneck at the Presidio Avenue end of Post Street by cutting a new street diagonally in a southwesterly direction through the block bounded by Post, Divisadero, Geary and Broderick Streets. It will provide a continuous route for traffic on Post Street proceeding westerly via Geary Boulevard. Geary Street is currently being widened west of Broderick Street. Under the principle of separation of different types of traffic applied by the Technical Committee, Geary Street east of Broderick will be designated as a primary transit street, and Post Street will be the private vehicular street. Thus wide Geary Boulevard will in effect split into two thoroughfares at the Broderick Street point where it narrows down into Geary Street. Eventually, when the cable cars are removed from lower O'Farrell Street, it is intended to designate

O'Farrell Street from its connection with Geary Boulevard via St. Joseph's Avenue to Market Street as a one-way street east bound, and Post Street from Market Street to its connection to Geary Boulevard at Broderick Street as a one-way street westbound.

7. Bryant Street Connection to The Embarcadero: $258,000

This will be a one-way, three-lane, partially elevated roadway running easterly from Second Street to Beale Street and will provide a continuous connection from the various ramps of the Bayshore Freeway (now tentatively planned to be constructed between Fifth and Eighth Streets) to The Embarcadero. This portion of Bryant Street, a major street in the South of Market district, is not cut through at the present time.

8. Improvement of Gore Corner between Oak and Market Streets: $67,000

As Oak and Fell Streets are planned as one-way streets (see Section II, Part VI of this report) this improvement will provide a better outlet for eastbound traffic on Oak Street turning into South Van Ness Avenue to cross Market Street. The gore will be cut back sufficiently to provide for good alignment with the west line of South Van Ness Avenue, and in addition, Oak Street will be widened for one block between Van Ness Avenue and Franklin Street by setting back the curbs.

9. Gough Street Extension Across Market Street: $210,000

This improvement will provide a direct connection from Gough Street across Market Street to Otis Street and the widened Thirteenth Street connection to the Bayshore Freeway and the Bay Bridge.

Total Cost of Project No. 1: Major Thoroughfare and Street Bond Issue:

The total cost of the nine projects proposed in this part of the report is $15,235,000. These projects constitute the major items of construction, in addition to the freeways which the State Division of Highways can be expected to finance, which the Technical Committee considers to be of greatest importance in breaking bottlenecks in existing routes of travel and in smoothing the flow of vehicular traffic within the City, and their financing by general obligation bonds is recommended at this time. Should any of the above projects be finally incorporated into the projected State Expressway system before the proposed bond issue election, the Technical Committee will recommend the substitution of other projects.

CURRENT PROJECTS FINANCED WITH GAS TAX MONIES

In addition to the above recommended projects, the Department of Public Works is currently carrying out projects on the following streets with funds provided from the state gas tax. These projects are shown in black on Plate 3.

ISLAIS CREEK BRIDGE — $1,000,000

A new 6-lane lift bridge on 3rd Street and Islais Creek to replace the present 30-year old 4-lane bridge which is now a bottleneck in an otherwise 6-lane thoroughfare.

ARMY ST., Harrison to Guerrero — 510,000

A physical widening to six lanes. This street will serve as one of the main westerly laterals to the new Bayshore Freeway.

CLIPPER STREET EXTENSION — 182,000

The construction of the Clipper Street Extension as a 4-lane arterial extends Army Street to a connection with Portola Drive and the residential districts west of Twin Peaks.

SAN JOSE AVE. and GUERRERO ST., Army Street to Randall St. — 658,000

A physical widening to four lanes serving as part of a connection between Market Street and the Bernal Cut, tying into Army Street

GUERRERO ST., Market St. to Army Street — 281,000

A 4-lane arterial serving together with the previous item in a northerly-southerly connection from Market St. and the Bernal Cut and intersecting Army Street, thus affording a wide distribution of traffic from the Army Street lateral of the Bayshore Freeway.

INDUSTRIAL ST., Bayshore to Oakdale Ave. — 100,000

The first step to provide an easterly lateral to the Bayshore Freeway from Bayshore and Alemany and ultimately connecting to Hunters Pt. via Evans Avenue and either Oakdale or Tolland Aves.

SEVENTH ST., Mission to Townsend St. — 106,000

A street widening project to permit smooth flow of traffic from Townsend to Market Street, connecting to the projected new Market Street crossing at 7th Street.

GENEVA AVE. EXTENSION — 109,000

Geneva Ave. will be extended from Mission to Alemany thus providing a connection from Third Street to Alemany Blvd. via Geneva Avenue.

ALEMANY VIADUCT at Junipero Serra Blvd. — 228,500

A grade separation at the intersection of two important State Highways.

GEARY BLVD., Broderick St. to Masonic Ave. $300,000

A physical widening that will improve vehicular traffic in that area by eliminating the Presidio Avenue bottleneck.

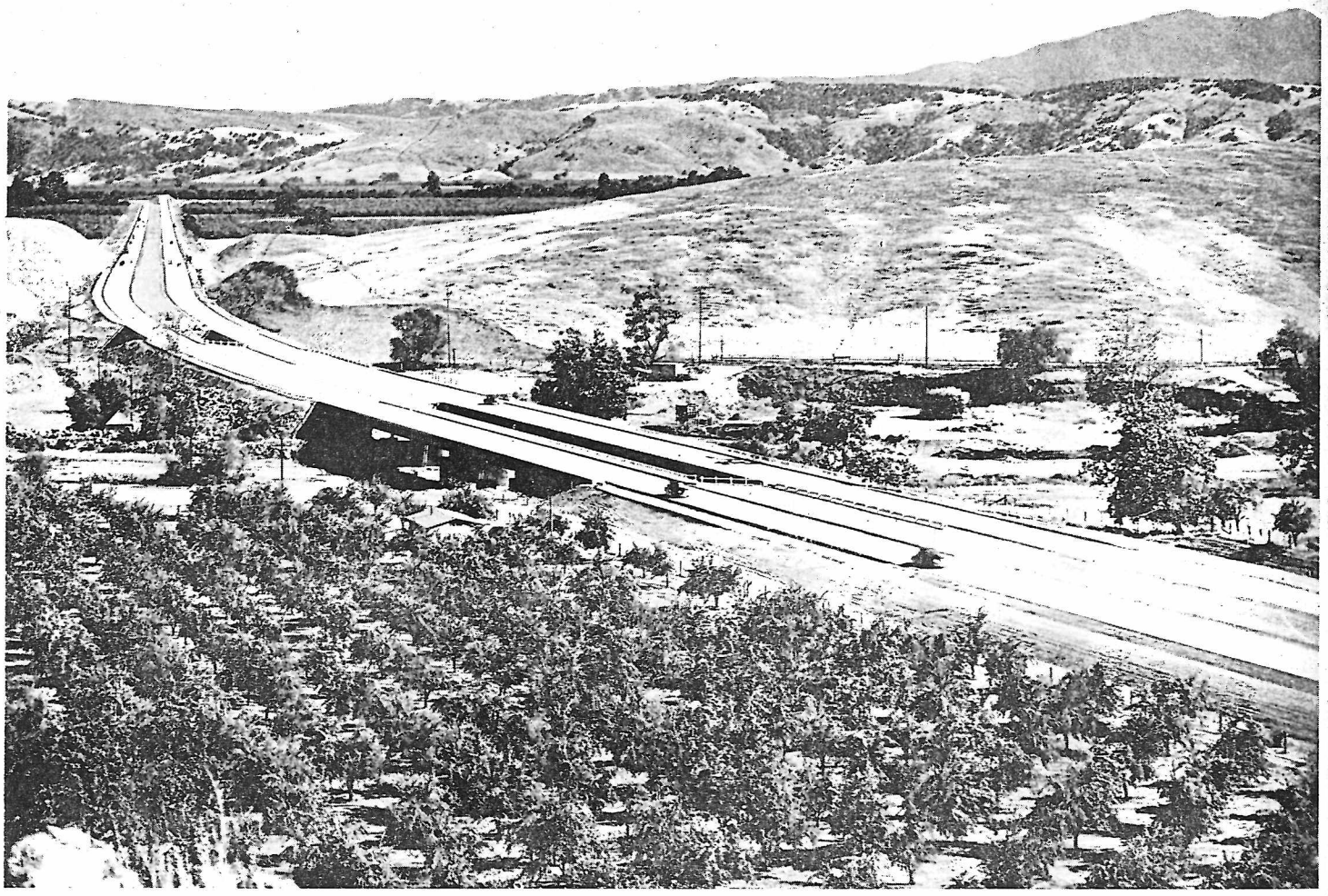
MASONIC AVE., Anza St. to Bush St. 20,000

A physical widening and extension of Masonic Ave. to a connection with Bush St.

Policy on Sidewalk Narrowing

The Technical Committee is in general opposed to the narrowing of sidewalks in retail shopping districts, except where incidental to certain specific major projects recommended in this report. However there are certain very short bottlenecks in streets previously widened which should be removed. Specifically, they are: Post Street between Powell and Taylor Streets, a distance of two blocks; California Street between Sansome and Montgomery Streets, a distance of one block; and Third Street between Mission and Market Streets, a distance of one block. It will have been a useless waste of funds to have widened the roadway for the major portions of the length of these streets, and furthermore, as recommended in this report, to provide them with modern synchronized traffic signals, if these minor bottlenecks, where four lanes of traffic must merge into two lanes, are to remain.

Therefore the Technical Committee recommends the narrowing of the sidewalks of these three bottlenecks, comprising four blocks in all, to conform with the work previously performed on the balance of these streets. Current funds are available for this work, if authority is granted by the Board of Supervisors to proceed.



Near its southern end, where it joins El Camino Real at Ford Road seven miles south of San Jose's central business district, the New Bayshore Freeway Extension crosses Coyote Creek on a center-tiered span and then, at the far left, bridges Coyote Road

New Link of Bayshore Highway Through San Jose Is Officially Opened to Traffic

MEMBERS of the California Highway Commission joined with officials of Santa Clara County and of the City of San Jose in dedicatory ceremonies marking the opening to traffic on June 19th of the newly-completed eight-mile extension of the Bayshore Highway through East San Jose.

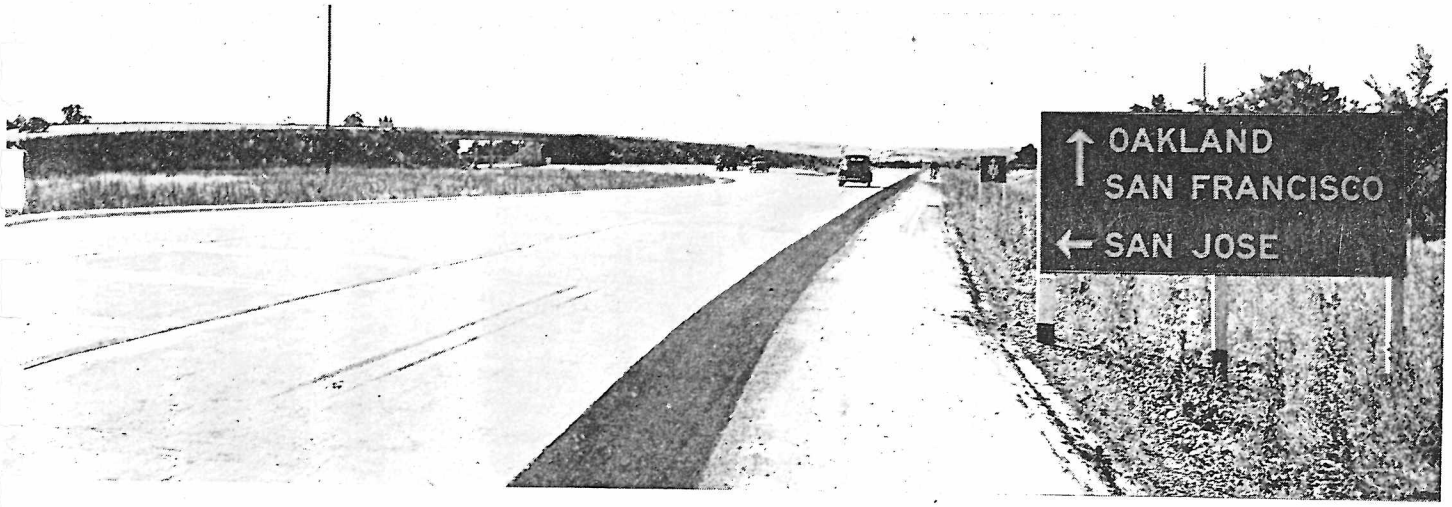
Constructed at a cost of $2,865,000, the new highway extends from East Santa Clara Street to Monterey Highway at Ford Road. It will relieve traffic congestion in the downtown section of San Jose.

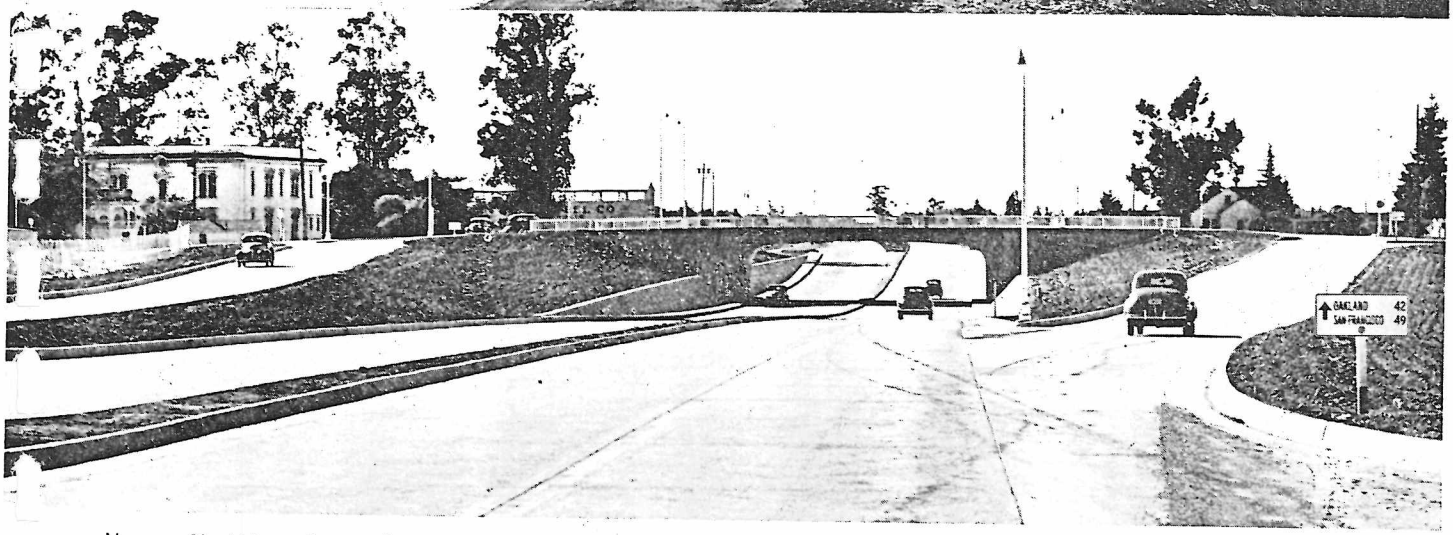
Representing C. H. Purcell, Director of Public Works and Chairman of the Highway Commission, Harrison R. Baker, Commissioner from Pasadena, hailed the project as an important milestone in the State's postwar highway program.

"This highway," he said, "is part of an overall plan that will link San Jose to Oakland and San Francisco by two great Freeways—the Bayshore and Eastshore Highways."

The new road is a four-lane highway with a 36-foot dividing strip. Provisions have been made to eventually widen the highway to six or eight lanes.

Russell E. Pettit, manager of the San Jose Chamber of Commerce, was master of ceremonies at the highway opening. Taking part in the program were: E. O. Wool, chairman of the Santa Clara County Board of Supervisors; Frank M. Shay, chairman of the Central Coast Council, California State Chamber of Commerce; Edward V. McIntosh, president of the San Jose Chamber of Commerce, and Mayor Albert J. Ruffo participated.





Upper—Northbound motorists approaching San Jose must enter the Ford Road Interchange at the southern terminus of the new Bayshore Freeway Extension, where it joins El Camino Real. Here they have the alternative of turning left, under the overhead structure, to ard the business district of San Jose, or proceeding straight ahead along the freeway extension, which passes through the outskirts of S Jose on the way to San Francisco or Oakland. Center—Approximately midway in the new Bayshore Freeway Extension, passing th ugh the outskirts of San Jose to connect Bayshore Highway with El Camino Real south of the city, is this gentle, 3,000-foot radius curve. Lower—Near its northern terminus the new Bayshore Freeway Extension, skirting San Jose in connecting Bayshore Highway with El Camino Real to the south of the city, passes through the Santa Clara Avenue interchange structure. In this view, looking north, th freeway leads straight ahead to San Francisco and Oakland, while the road to the right joins Santa Clara Avenue leading west to S Jose's business district or east to Alum Rock Park

Portion of Bayshore Freeway Expected To Be Completed Early Next Year

By H. A. SIMARD, Associate Highway Engineer

THE GRADING and paving of a five-mile portion of the Bayshore Freeway between South San Francisco and Broadway Avenue in Burlingame, one of the largest single contracts ever let by the Division of Highways, amounting to $3,250,000, is progressing at a rapid rate with completion early next year being assured.

This project was originally planned as an expansion of the existing four-lane undivided Bayshore Highway. However, the City of San Francisco had under execution a $20,000,000 expansion program for its airport, Mills Field. After considerable negotiation between the city and the State, the present route for the freeway to the west of the present road was adopted. This allows an additional 2,600 feet westward for the expansion of the airport.

This freeway is being constructed as a six-lane divided highway. The division strip, 36 feet in width, is sufficiently wide to provide for two additional traffic lanes when traffic conditions justify. The pavement to be placed under this contract consists of two separate roadways 36 feet in width surfaced with four inches of asphalt concrete on eight inches of crusher run base.

MUD DEPTHS OVERCOME

In general, the project traverses reclaimed marsh and tidelands which have for a number of years been used for cattle grazing and the growing of hay crops. Underlying these reclaimed lands are mud depths varying from 0 to 60 feet so that throughout most of the project very unstable foundation conditions are encountered. Embankments for the new highway have an average height of seven feet. In order to accelerate the anticipated settlement of these embankments throughout the unstable areas, an overload of two feet above profile grade is being placed. This overload is removed after a minimum waiting period of 30 days in order that the subgrade can be prepared for the pavement.

In some of the deeper mud areas and at the approaches to proposed traffic interchange structures, the foundations for which are now being constructed under a separate contract, the sand drain method for consolidation of the underlying mud is being

Here a five-yard truck is spreading sand blanket over sand drains

Fan sprays on 4,500-gallon water truck mounted on Euclid truck unit in operation

used. In other structure locations or approaches where the mud depths are less than 20 feet the mud is being stripped before the placement of embankment material. Where no foundation treatment is being used the embankments are placed on the original ground at a slow rate so that it will consolidate without being displaced.

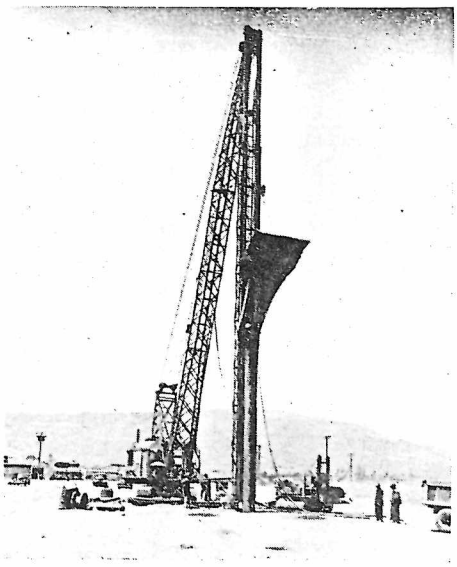
SAND DRAINS NECESSARY

The sand drains referred to in the above paragraph consist of a vertical hole 18 inches in diameter extending to relatively firm bottom and backfilled with a carefully graded sand. Firm bottom is generally defined as material having a moisture content of 25 percent or less. The drains, placed on 10-foot centers in order that there is a drain for each 100 square feet of fill area, are expected to provide a means of relief for the subsurface water as the fill loads are increased, thus permitting consolidation of the fill during construction; a consolidation which normally would continue after completion.

The total estimated quantity of vertical drains to be constructed is 235,000 lineal feet, with the depths ranging from a minimum of 15 feet to a maximum of 60 feet in the deepest marsh areas.

The method of installation on this project consists of driving an 18-inch diameter mandrel equipped with a bottom plate to the required depth and introducing the sand backfill by means of a hopper at the top. Air under pressure of 100 p.s.i. is then admitted at the top and as the mandrel is withdrawn, the backfill material is forced past the free hanging bottom plate and into the hole.

Pile driving rig for constructing sand drains



DRIVING OF MANDREL

Driving of the mandrel is accomplished by means of a crawler-mounted 2½ yard Lima crane, with six feet extra length added to the crawler tracks to take care of counterbalance, equipped with 80-foot leads and an air-driven hammer. Prior to placing sand drains, it was necessary to place a "working table" of selected material to a thickness of from 2 to 3 feet over the marshes in order to provide support for this equipment. Nevertheless, it was still necessary to use heavy timber mats under the rig in the deeper mud area at the northern end of the project.

After the completion of sand drains in each area treated, the next order of work is the placing of a 12-inch layer

of sand fill material over the entire width of fill at the tops of the vertical drains. The purpose of this blanket is to provide a means of release for the subsurface water brought up through the vertical drains. Embankments were constructed by placing subsequent lifts of selected material on the sand blanket.

The maximum rate of embankment construction was limited by specifications to one foot per day and three feet during any one week. The actual rate of loading in the areas treated with sand drains was determined through observations of results obtained by means of settlement platforms and pore pressure installations.

MARSH LAND PROBLEMS

The settlement platforms, 3 feet x 4 feet x 3 inch dimensions, were placed on the original marsh prior to the start of construction. A section of iron pipe was attached to each platform with the top of the pipe kept above the top of the fill by the addition of lengths as the fill heights were increased. The rate of settlement and total consolidation are readily obtained by means of elevations taken on the tops of the pipes. Permanent installations are planned which will permit future observations after completion of the project.

Hydrostatic pressures developed at various depths in the marsh areas underlying the embankments are observed by means of equipment designed and provided by the Materials and Research Department.

Briefly, these pressure measuring installations consist of well points driven to the desired depths and connected to compound gauges outside the toe of the fill by means of iron pipe and copper tubing.

Pressures as high as 10 p.s.i. are developed during loading of the embankments, gradually decreasing to normal as the subsurface water is released through the sand drains and drainage blanket.

MATERIAL IMPORTED

By correlating the rate of consolidation, as determined from the settlement platforms, with the pressures developed at the well points, the rate of application of additional lifts is determined, with the result that excessive pressures (and consequent later displacement or failure) should be avoided.

Since the area traversed by this freeway construction is marshy with no material within the limits of the right of way available for the embankment construction, it is necessary to import material for this purpose. At the time the preliminary report and special provisions for the contract were being written, Macco Corporation & Morrison-Knudsen Company, Inc., were hauling material to expand Mills Field Airport from a borrow pit approximately three miles west of the center of the proposed project over a private haul road which crosses El Camino Real, Southern Pacific Railroad and Bayshore Highway on overhead structures. This material deposited on Mills Field was being paid for by the cubic yard from cross-section measurements of the borrow pit.

50,000 TONS OF BORROW PER DAY

It appeared likely that this same construction company would submit a favorable bid for this freeway construction since it was sitting astride the project with materials and equipment at hand to do the job. It was, therefore, decided to pay by the ton for the approximate 2,000,000 cubic yards of borrow required in order to accurately segregate the material going to two jobs from the same source. The maximum amount of borrow hauled in any one 18-hour day was 50,000 tons.

This amount of material was hauled in large dirt moving units composed of Euclids netting 22 tons, Dixon wagons netting 25 tons and Peterbilts netting 47 tons. These dirt moving units are loaded at the borrow pit with 2½ cubic yard Northwest diesel and 6 cubic yard Bucyrus Erie electric shovels. Rooters are used at the pit to loosen the material, then it is pushed to the shovels with D8 Caterpillar tractors equipped with bull dozers. The maximum number of equipment units used at any one time was 35 Euclids, 18 Dixon wagons and 25 Peterbilts which were being loaded with three 6 cubic yard electric and two 2½ cubic yard diesel shovels.

MOUNTAIN IS REMOVED

It is interesting to note that although the borrow pit from which this material is being obtained was once a mountain, it is now a vast hole in the ground after the removal of some 12,500,000 cubic yards of borrow, some 10,000,000 cubic yards having been delivered to the San Francisco Airport at Mills Field. However, all excavations are made to an approved contour plan and about 243 acres of very valuable land will be made in a location formerly used only for grazing.

There are a number of large drainage structures on the project, the largest of which are being constructed as part of the proposed drainage system planned by the City of San Francisco to keep drainage waters away from the airport. A canal to collect these drainage waters is proposed all along the western side of the freeway between San Bruno Avenue and Millbrae Avenue, a distance of 2½ miles. At the northerly end this canal system crosses under the freeway through a triple 10 foot x 8 foot x 181 inch reinforced concrete culvert and through a triple 10 foot x 8 foot x 500 inch reinforced concrete culvert under the San Bruno Avenue cloverleaf ramps. At the southerly end the canal crosses under the freeway through a triple 10 foot x 6 foot x 155 inch reinforced concrete culvert.

There are also two large reinforced concrete boxes, 7 feet x 6 feet x 166½ inches, being constructed to carry utilities under the freeway to the airport.

The project is being constructed under the supervision of Jno. H. Skeggs, District Engineer; R. P. Duffy, District Construction Engineer; and H. A. Simard, Resident Engineer, representing the State Division of Highways.

Macco Corporation & Morrison-Knudsen Company, Inc., are the Contractors on this $3,250,000 contract and are represented on the job by O. H. Tucker, Project Manager, and George Haensel, General Superintendent.

A separate Bridge Department contract is now under way for the foundations on the interchange structures at Broadway Burlingame, Millbrae Road, the San Francisco Airport connection and San Bruno Avenue. Carrico & Gautier are the contractors on this project.

The superstructures for these separations will be let to contract as soon as the critical steel shortage has eased.

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On opposite page. Upper—This 30-cubic yard Peter truck is spreading imported borrow. Center — Electric shovel dipper loading 19-cubic yard Dixon wagons at borrow pit. Lower — Three section sheep foot tamper compacting fill

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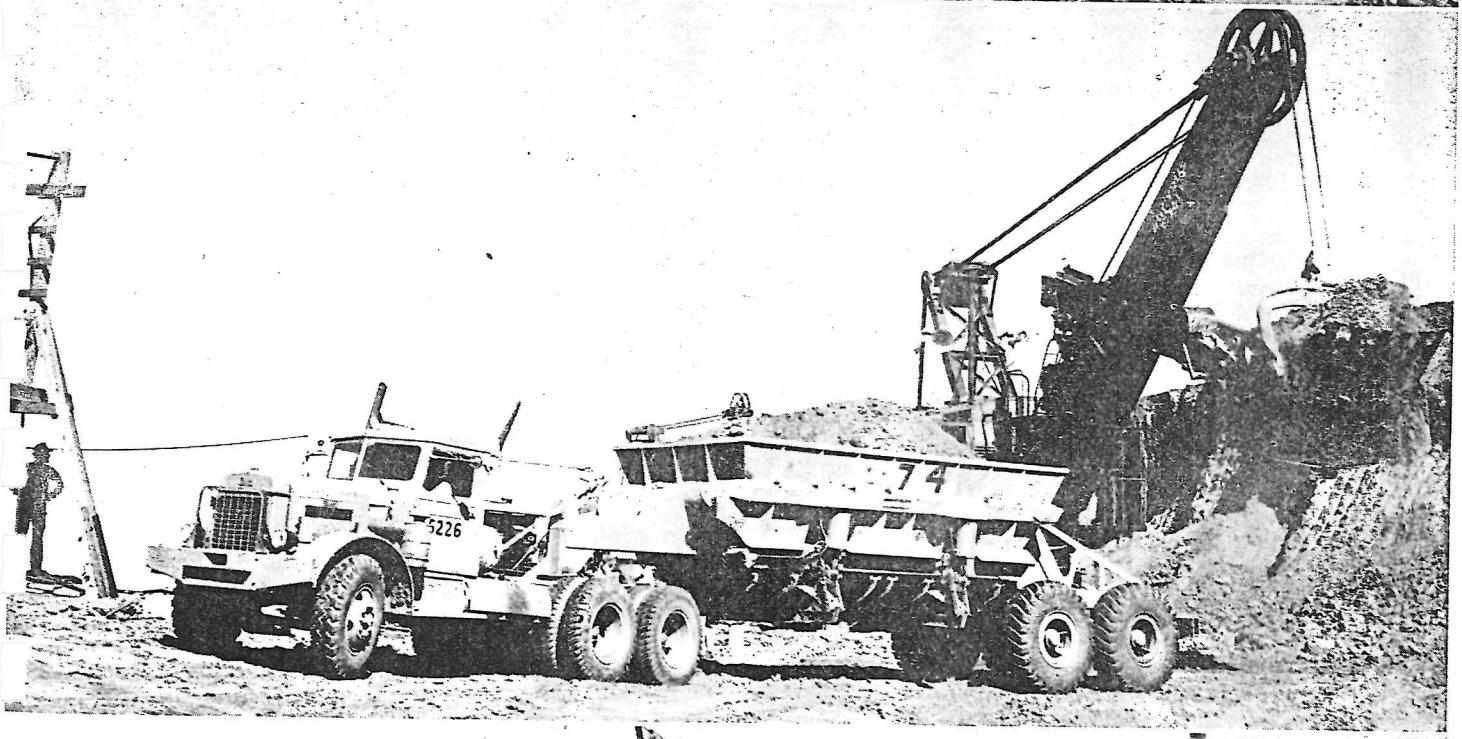
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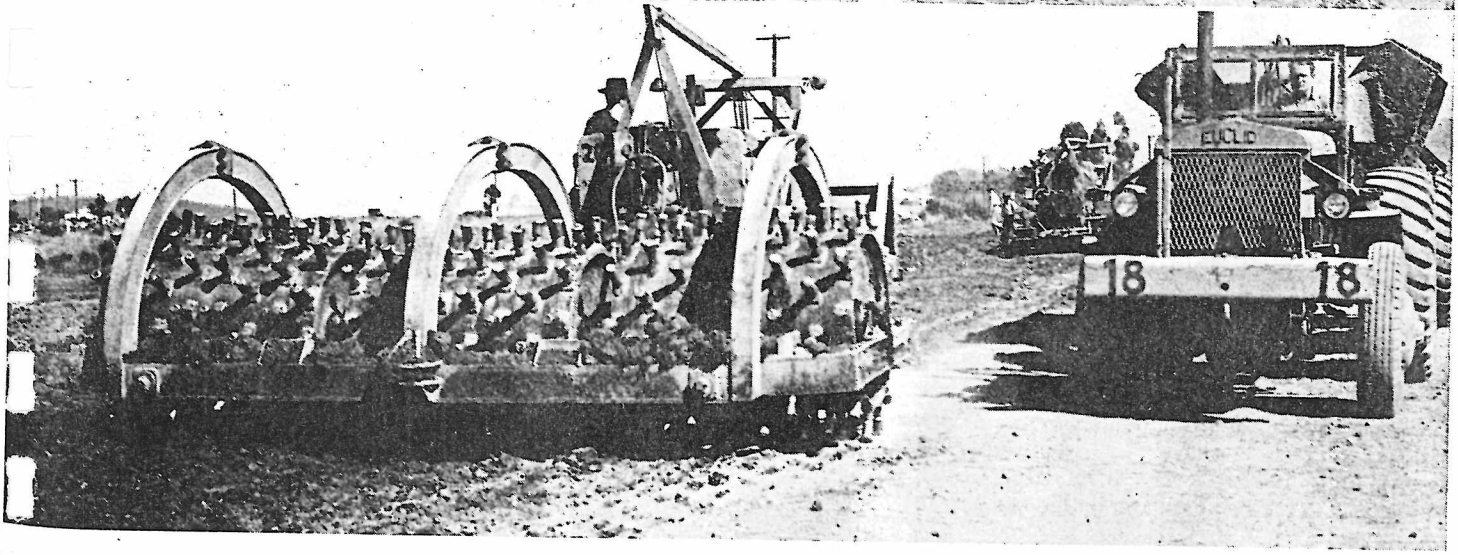
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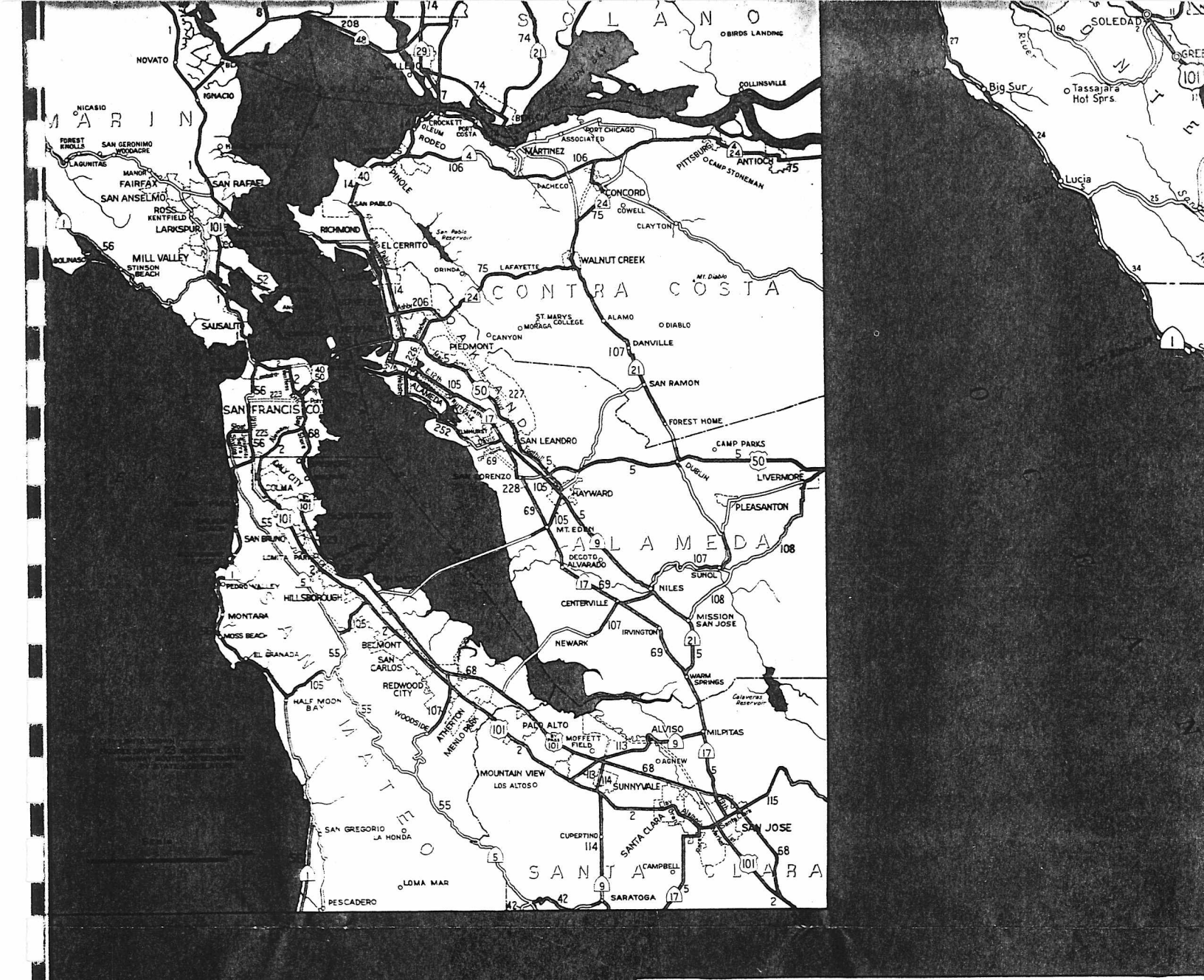

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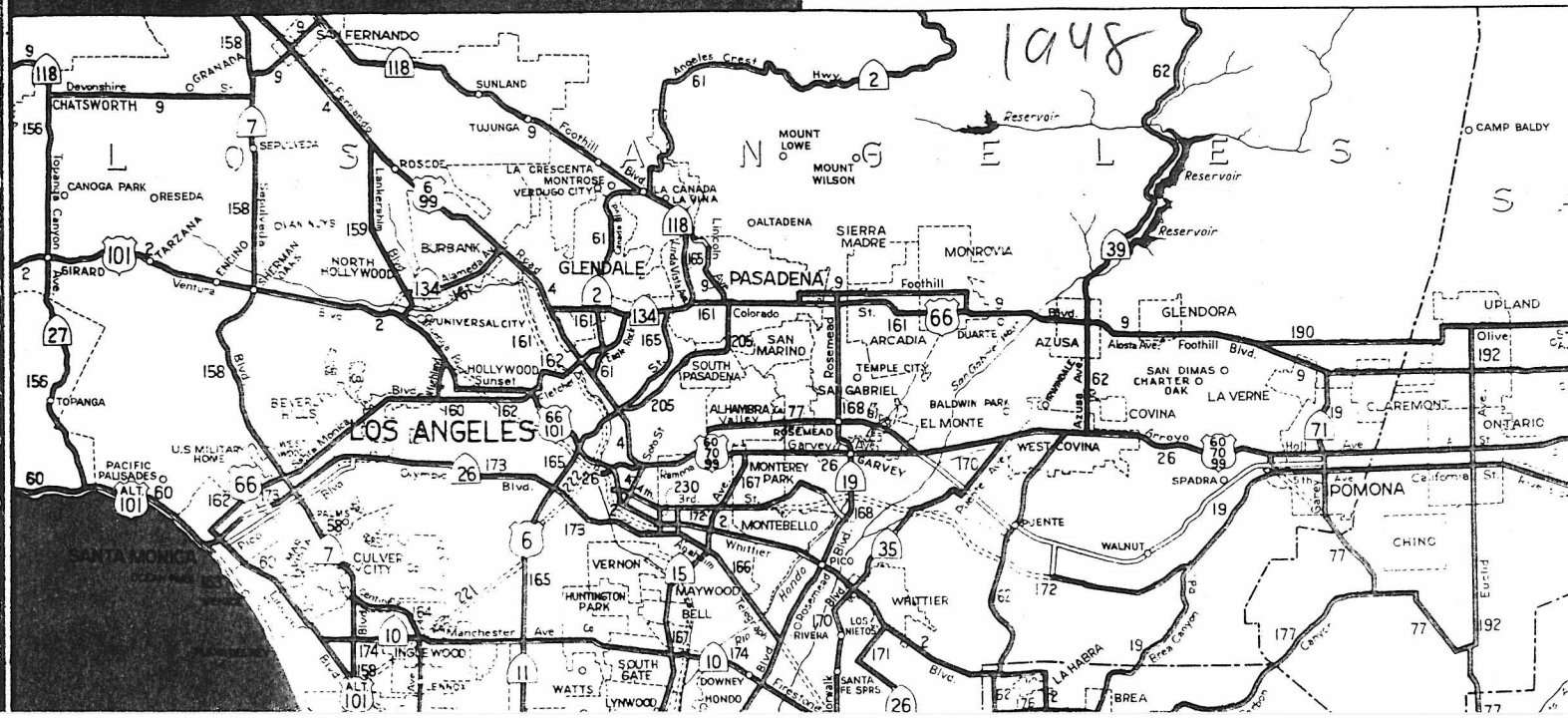

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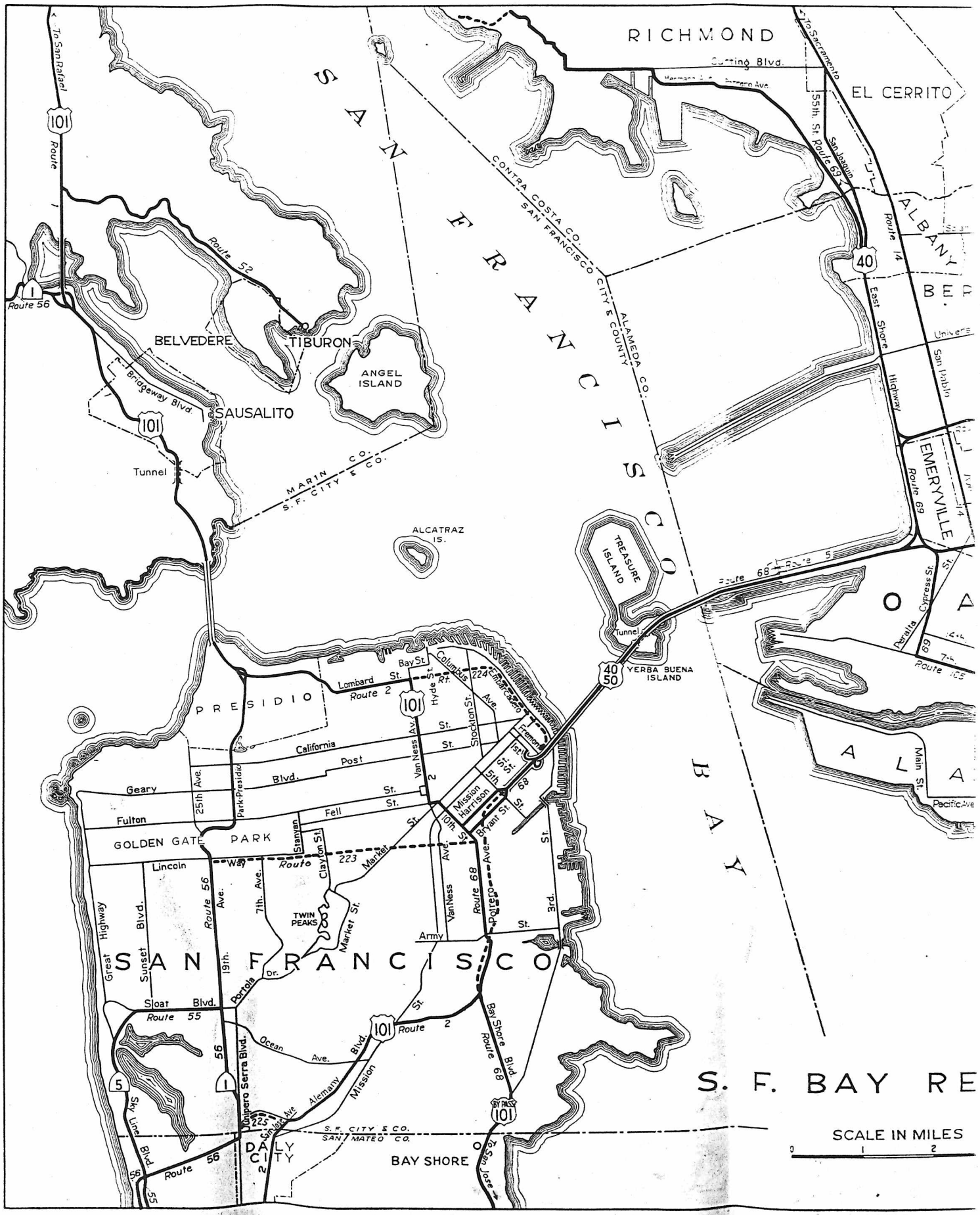
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ANGEL ISLAND
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Portella
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PRESIDIO
Lombard St.
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Lincoln Way
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Sunset Blvd.
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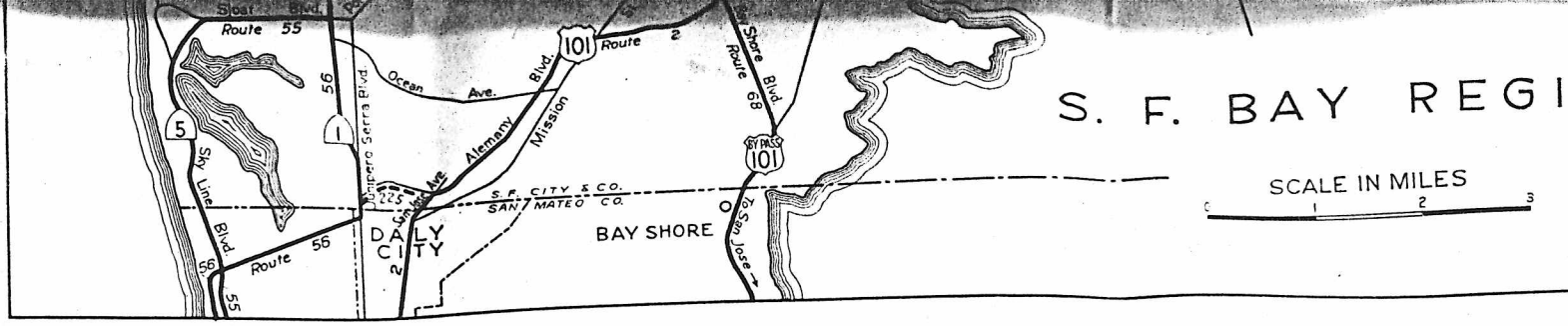
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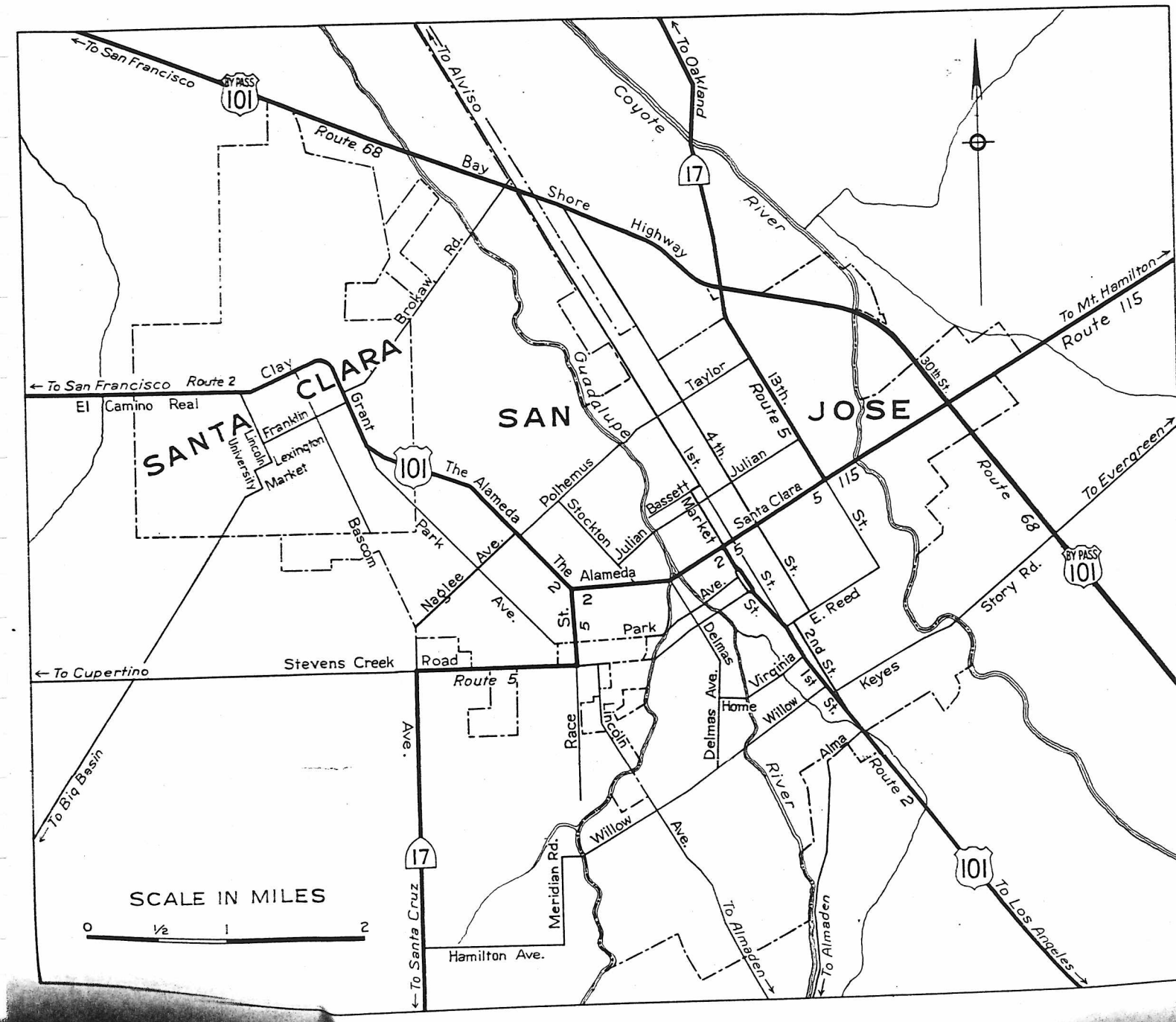
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To Alviso
Coyote River
To Oakland
17
To Mt. Hamilton
Route 115
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To San Francisco Route 2
El Camino Real
Clay
Grant
SANTA CLARA
SAN JOSE
Guadalupe
Taylor
13th.
Route 5
30th St.
Franklin
Lincoln
University
Lexington
Market
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Polhemus
Stockton
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Bassett
Market
Santa Clara
St.
Bascom
Park
Naglee Ave.
2nd St.
Delmas
E. Reed
Story Rd.
To Evergreen
Route 68
Stevens Creek Road
To Cupertino
Route 5
Race
Lincoln
Virginia
Home
Willow
Keyes
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River
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To Big Basin
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To Almaden
To Los Angeles
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A Report To The Membership

What's Being Done About Traffic?

On October 17, 1946, the Traffic and Highway Committee of the San Francisco Chamber of Commerce presented a 5-point "immediate" action traffic plan and a 6-point long-range traffic program to the San Francisco Board of Supervisors and city administration.

As a service to the Chamber membership, the following is a report on this program. Material for the report was supplied by the Public Utilities Commission, the Department of Public Works and the Police Department of San Francisco.

CHAMBER PROGRAM	ACTION TAKEN
1. Installation of coordinated visual traffic signal system.	New signals installed on Third Street. Installations on main thoroughfares being carried out over four-year period. State highway route—Van Ness Avenue and Tenth Street to Army Street will be finished by November. Alemany, Mission to San Jose Avenue will be submitted to bids in two or three weeks. Bush Street to Presidio Avenue to follow shortly.
2. Removal of outer street car tracks on Market Street, replacing street cars with buses or trackless trolleys.	Inner tracks on Market Street from Fremont to Valencia rebuilt to prepare for eventual removal of outer tracks. Effective June 1948 streetcars began operating only on inner tracks of Market Street, west of Kearny Street. As of July of this year, 24 trolley coaches and 209 motor coaches were delivered and are in service throughout the city.
3. Increase in the one-way street system, repaving of streets.	Additional one-way streets added from time to time, based on police surveys. Turk Street to become a one-way street westbound and Grant Avenue a northbound one-way street within a month. Some track removal and repaving jobs completed or in progress are: Kearny Street, Sacramento Street, Polk, Folsom, Steuart, Howard and Fillmore.
4. Stringent enforcement of existing traffic laws with special emphasis on parking.	Police enforcement increased. Parking meters installed in numerous areas. Tow-away program inaugurated on certain downtown streets.
5. Extension of Stockton Street Car Line across Market Street.	Accomplished September 1947. Line now runs to Southern Pacific terminal.

THE ABOVE FIVE POINTS WERE LISTED BY THE CHAMBER AS "IMMEDIATE ACTION" PROPOSALS. THE SIX POINTS LISTED BELOW ARE CONSIDERED IN THE CATEGORY OF "LONG RANGE" ACTIVITY.

CHAMBER PROGRAM	ACTION TAKEN
1. Rehabilitation of transit system.	Part of this operation begun with purchase of new street cars, buses, trolley coaches, installation of central control radio station, installation of 40 electrical headway recorders, modernization of some of existing storage facilities to service buses.
2. Tunnel through Russian Hill between Mason and Leavenworth.	Will cost about $6,000,000. City is working on land purchase now and bids are to be submitted in the spring.
3. Off-street parking facilities, garages and parking lots.	Plan to acquire land in fringes of downtown area and make arrangements with private operators for parking to keep cars out of congested areas. Action expected when current overall traffic survey indicates where parking is needed.
4. Arterial connections with Bayshore Freeway.	State is to provide on and off ramps at Alemany, Division—Potrero and other arterial connections. City acquisition of land for connection at 13th Street is underway. Arterial proposals should be ready by next spring based on expert survey report to be made by mid-October this year.
5. Portola Freeway—modern highway over Twin Peaks.	In abeyance following successful opposition of Eureka Valley residents. To be re-studied in light of survey report to technical committee.
6. Replacement of Islais Creek Bridge to eliminate Third Street bottleneck.	Bids will be called for on this project next month; construction will follow. Plans complete.

Financing of several of the above projects will come from the 87 million dollar bond issue voted by the citizens of San Francisco in November, 1947.

Bay Crossings

Parallel Span Across San Francisco Bay Recommended

For key to photographs see map on Pages 2-3.

AS CHIEF ENGINEER of the Division of San Francisco Bay Toll Crossings, Ralph A. Tudor on Tuesday, November 16th, recommended to the California Toll Bridge Authority that a parallel bridge, together with approaches on both sides of San Francisco Bay, be built at the earliest practicable date and construction of the proposed southern crossing be deferred until it can be financed as another bay crossing.

Tudor submitted to the authority, of which Governor Earl Warren is chairman, a report based on 10 months of studies and investigations of additional toll highway crossings of San Francisco Bay in compliance with a resolution adopted by the authority on November 10, 1947.

Comparative Costs

At a public meeting held in the Assembly Chamber of the State Capitol, Tudor summarized his report. He estimated the total cost of a parallel bridge, including approaches, right of way and engineering, at $155,014,000 and of a southern crossing at $178,421,000.

"Plans can be completed and construction on a parallel bridge started by March, 1950," Tudor said, "unless unforeseen delays arise."

Tudor's report deals with a bridge parallel and northerly of the existing San Francisco-Oakland Bay Bridge, together with its approaches, and including a tube under the Oakland estuary with connections to the East Shore Freeway and the City of Alameda, and a highway crossing connecting the vicinity of the Bay Shore Freeway and Army Street in San Francisco with the vicinity of Fifth Street in Alameda and including a crossing of the Oakland estuary to connect with the East Shore Freeway.

Traffic Findings

On the subject of traffic, the report says:

"The requirements and convenience of present and future transbay vehicular traffic are probably the most important matters to consider. If this traffic is not reasonably well served, there must be some overriding and irrefutable reason for adopting a solution which is less satisfactory to the people who use and pay for the crossings. It is not difficult to determine present requirements, but the future is less certain. The latter must be carefully and exhaustively studied and not left to any short and quick speculation.

"The existing San Francisco-Oakland Bay Bridge is now congested and is approaching its ultimate capacity. If a parallel bridge is built, this condition will be effectively relieved as soon as the new bridge is completed. This relief will continue beyond 1970. If a southern crossing is built, congestion on the existing bridge will be reduced but not eliminated, and both crossings will again be congested during peak hours by 1965. Serious congestion on the San Francisco-Oakland Bay Bridge earlier than 1965 can be avoided only at the expense of diverting some peak hour traffic that would normally prefer the bridge to a longer and less convenient route via the southern crossing.

Traffic Percentages

"Approximately 82 percent of the transbay traffic will be better served and will prefer a parallel bridge to a southern crossing; 18 percent will be better served by a southern crossing. Estimates of future expansion in all areas on both sides of the bay through 1970 do not change these percentages.

"A southern crossing will induce new transbay traffic from areas which it will best serve. This is particularly true for the City of Alameda. However, the total induced traffic from all areas amounts to less than 1 percent of the total transbay traffic.

"After diversions to a southern crossing resulting from congestion on the present bridge, induced traffic, and other causes, a southern crossing in 1955 will carry an estimated 21.5 percent of all transbay traffic. The San Francisco-Oakland Bay Bridge will still carry 78.5 percent of the total. By 1970 these percentages are estimated to be 24 percent and 76 percent respectively.

No Congestion in San Francisco

"There is no choice between the crossings insofar as congestion on the

PREFACE

The impending need for added facilities on the San Francisco-Oakland Bay Bridge was recognized during the war and, on its termination, the Department of Public Works of the State of California was directed by the Toll Bridge Authority to conduct a study of the problem. Authorization was given on October 30, 1945, and a report rendered on January 31, 1947. This report recommended the construction of a new bridge parallel and immediately north of the existing crossing.

On May 10, 1946, Congress directed that a Joint Army-Navy Board be formed to study the matter. The board rendered its report on January 25, 1947, and favored a southern crossing of the bay between the vicinities of Army Street in San Francisco and Fifth Street in Alameda.

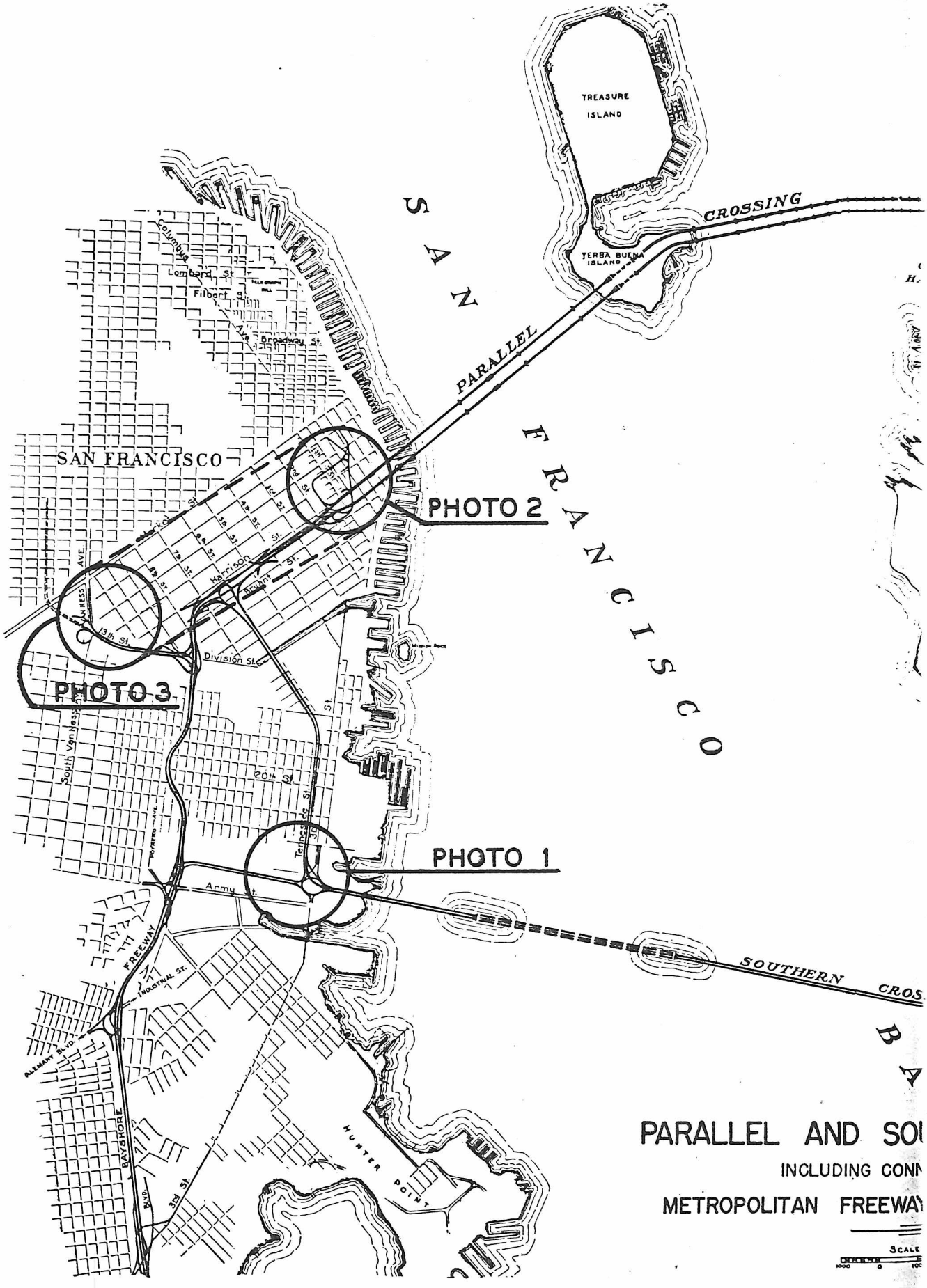
On November 10, 1947, Director of Public Works C. H. Purcell recommended to the California Toll Bridge Authority that two additional crossings be built, conforming in general to the separate recommendations described above on the same date.

The California Toll Bridge Authority directed the Department of Public Works to report on both projects.

The Director of Public Works on December 29, 1947, created a new division within his department which was designated "The Division of San Francisco Bay Toll Crossings."

Funds to finance the engineering work needed prior to the issuance of revenue bonds for construction were appropriated by the California State Legislature. The sum of $950,000 became available on September 19, 1947, and an added $500,000 on July 1, 1948.

The Division of San Francisco Bay Toll Crossings officially began its assignment in San Francisco on January 10, 1948.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Filbert St.
Broadway St.
Harrison St.
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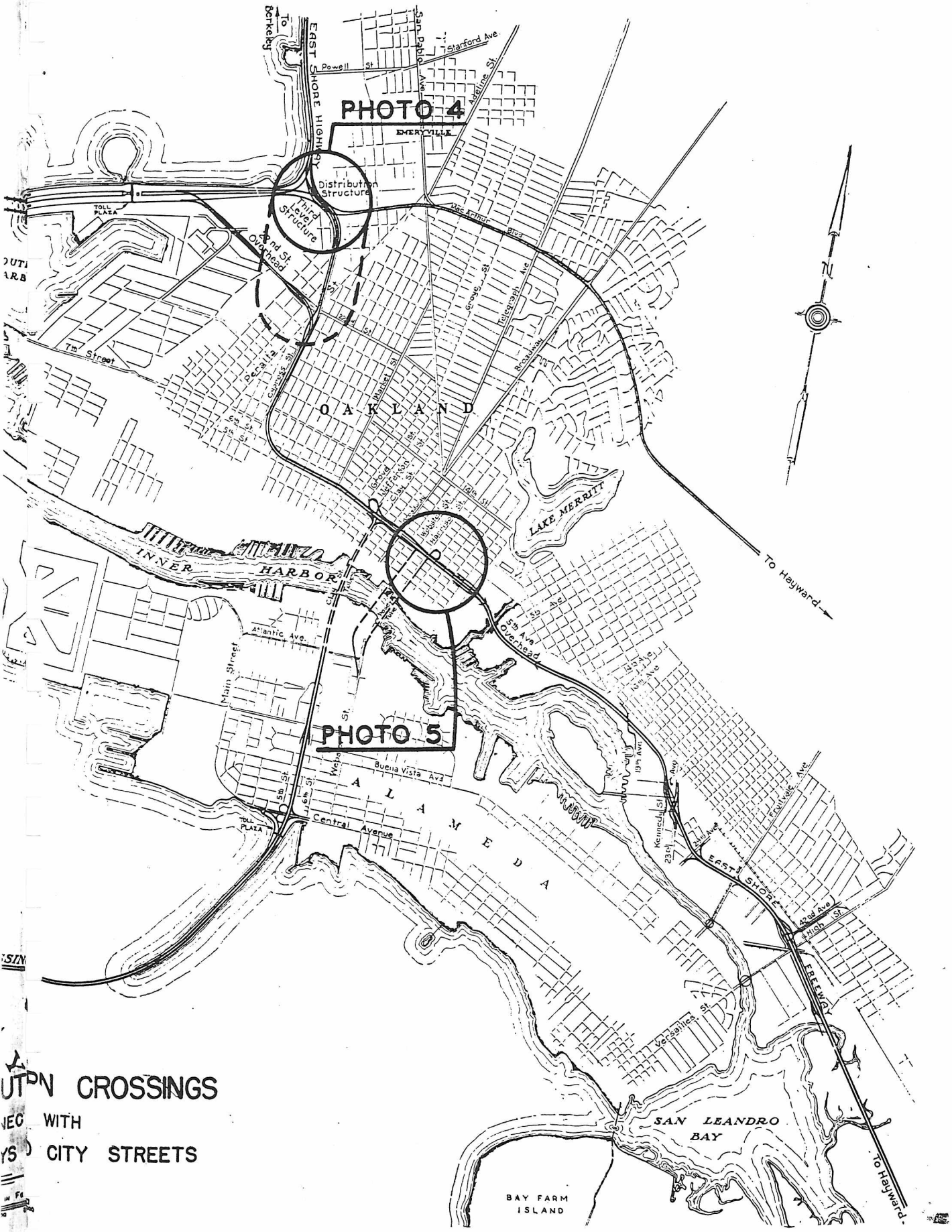

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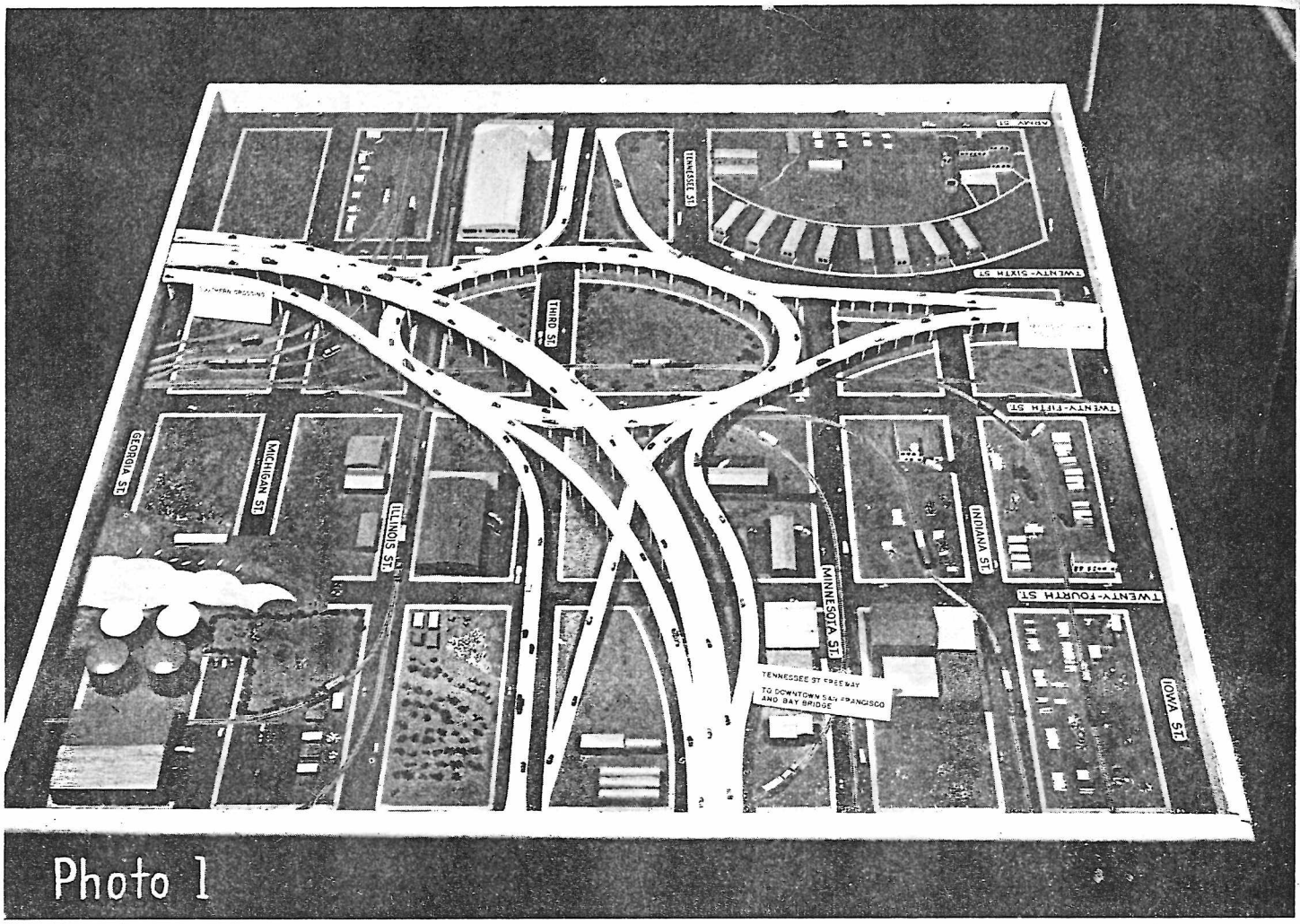


Southern Crossing model, showing Third and Army Streets rotary

streets in downtown San Francisco is concerned. The proposed system of ramps and freeway connections is planned to best suit the requirements of transbay traffic and to fit the street and local traffic pattern. At present there are two exits and two entrances for upper deck transbay traffic in San Francisco. Plans for either of the proposed crossings offer six entrances to the bridge and five exits for transbay passenger cars between the Embarcadero and South Van Ness Avenue. These are widely dispersed. In addition, the new facilities will serve Bayshore Freeway traffic destined to and from points south of San Francisco and an appreciable amount of local intracity traffic that can travel to advantage along the Bayshore Freeway and connections. The integrated connections between the existing bridge, the Bayshore Freeway and either of the new crossings will do much to relieve congestion of the streets in downtown San Francisco.

Parallel Bridge Preferred

"In the East Bay the approach layout for either new crossing, coupled with the East Shore Freeway and the streets of the several cities, is also designed to avoid congestion.

"Since a southern crossing will not effectively relieve congestion on the bay crossings, its construction will leave a large proportion of transbay traffic inconvenienced. Service for a small proportion of transbay traffic will be improved. A parallel crossing will avoid congestion for all traffic through 1970, though approximately 18 percent of the vehicles will have to travel some additional distance. There is no choice between the crossings insofar as congestion on the streets on either side of the bay is concerned.

"Insofar as service to traffic is concerned it is concluded that a parallel crossing is to be preferred."

A summary of Tudor's report, in part, follows:

Simultaneous Construction of Both Crossings

The Toll Bridge Authority by its action on November 10, 1948, adopted as a program the construction of two additional crossings and also limited consideration to the following two routes:

1. A bridge parallel and northerly of the existing San Francisco-Oakland Bay Bridge, together with its approaches and including a tube under the Oakland Estuary with connections to the East Shore Freeway and the City of Alameda.
2. A highway crossing connecting the vicinity of the Bayshore Freeway and Army Streets in San Francisco with the vicinity of Fifth Street in Alameda, and including a crossing of the Oakland Estuary to connect with the East Shore Freeway.

Other possible routes and methods for providing transbay vehicular facilities had been

considered by the joint Army-Navy Board of 1947 and the Department of Public Works, and in each instance adverse recommendations made by one or the other or both.

In the studies covered by this report, it was early realized that the present cost of building two additional crossings might exceed the credit available to the Toll Bridge Authority, since the financing of new work must be from the sale of revenue bonds. This, in turn, depends upon the earning ability of the crossings. These studies have therefore been directed to one of the following three possible solutions:

1. Simultaneous construction of both the Southern Crossing and the Parallel Bridge.
2. Construction of the Southern Crossing first with subsequent construction of the Parallel Bridge when the necessary additional credit is available.
3. Construction of the Parallel Bridge first with the Southern Crossing deferred until additional financing is possible.

After complete cost estimates had been made, the combined cost of both crossings was found to exceed the amount of money that can be borrowed. It is, therefore, not possible to build both crossings simultaneously, and it is necessary to select either the Parallel Bridge or the Southern Crossing for prior construction.

Revenues

The estimated annual revenue from a combination of the existing and the Parallel Bridges when the latter is first open for traffic is $9,675,000. For a combination of the existing bridge and the Southern Crossing it is $9,695,000. The difference of $20,000 favors a Southern Crossing. The estimated difference in 1970 is $28,000.

By increasing the tolls to 35 cents, the traffic will decrease about 4,110,000 vehicles per year but the revenue will increase an estimated $1,301,000.

Traffic Handling Facilities

In the East Bay, traffic handling facilities for both of the additional crossings as well as the existing bridge have been planned to take full advantage of the East Shore Freeway which is now under construction by the State of California. At the same time approaches have been laid out to make the best possible connection with existing streets and to fit into improvements planned for the future.

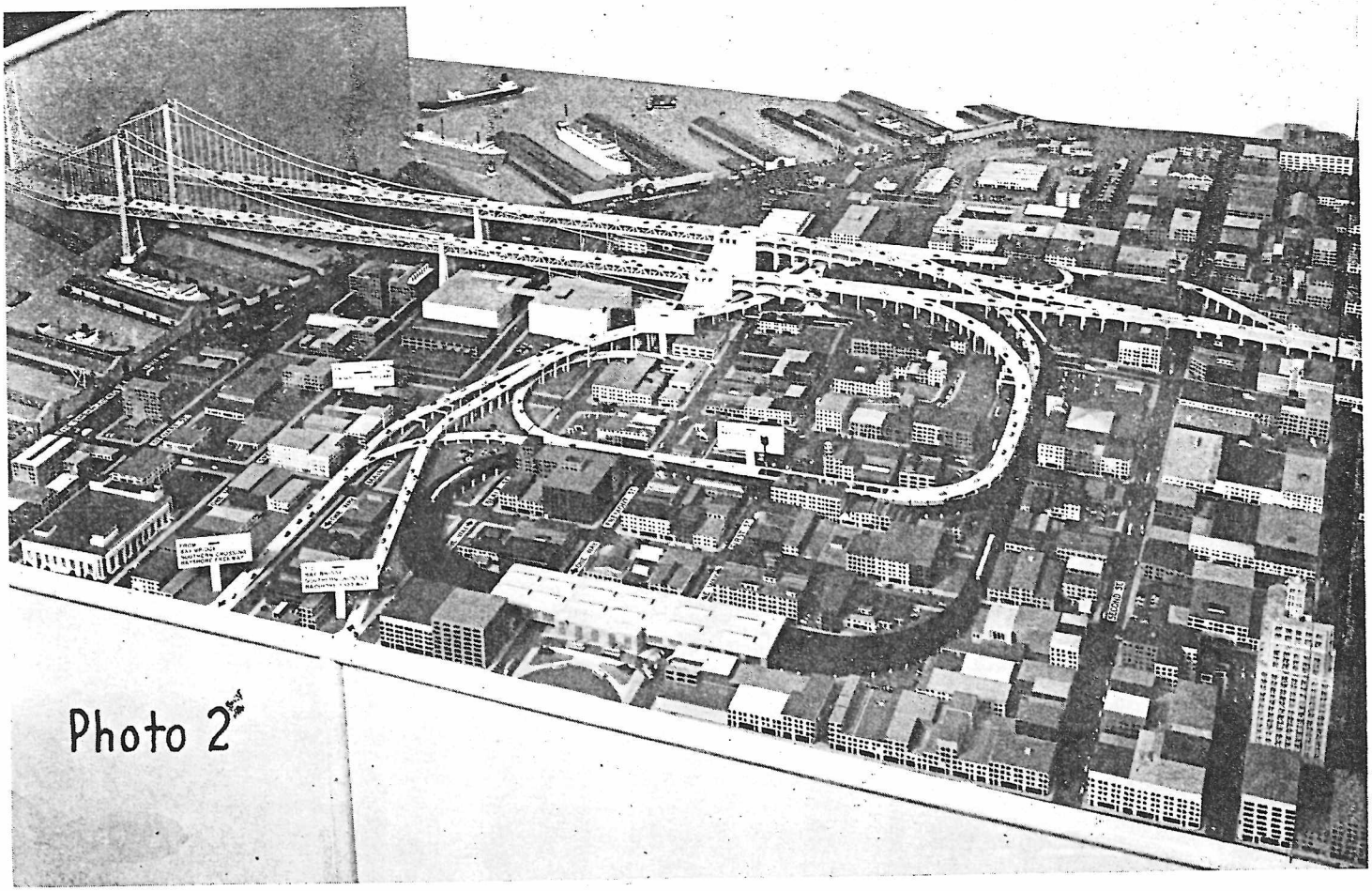
For the combination of a Parallel Crossing with the existing bridge, a new 22d Street Approach into Oakland will be built. It will connect with the East Shore Freeway as well as with local streets in the vicinity of 22d and Peralta Streets, and will also serve the Oakland Port of Embarkation. As a part of the Parallel Crossing an additional tube under the Oakland Estuary between Oakland and Alameda will be built and operated as a twin to the Posey Tube.

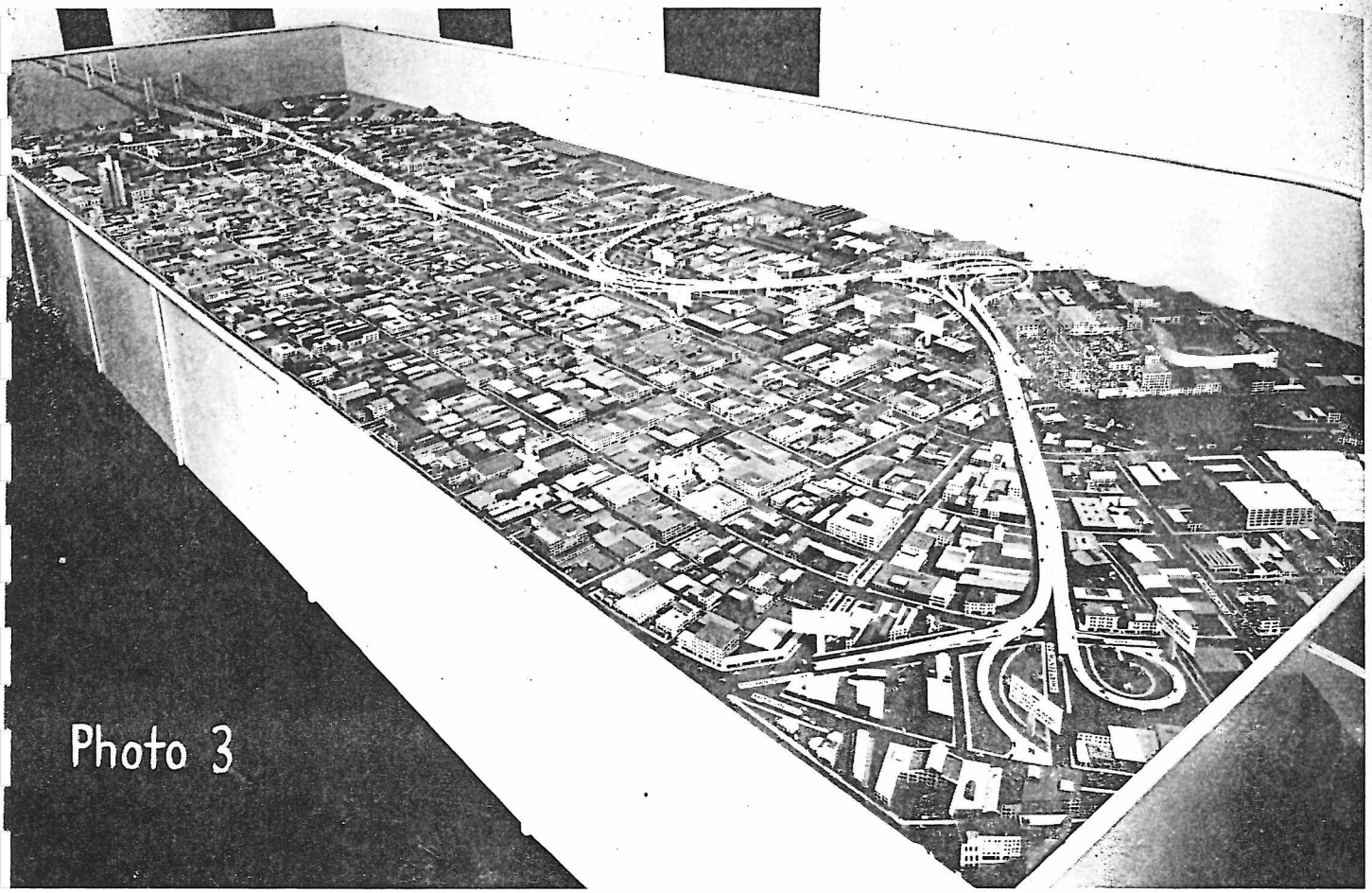
Southern Crossing

For the Southern Crossing, connections are made with the street system in Alamda, and with the East Shore Freeway and the Street system in Oakland. New twin tubes under the Oakland Estuary in the vicinity of Clay Street, which are to be a part of this crossing, will be of substantial benefit to local traffic between Oakland and Alameda, and will serve to relieve the Posey Tube.

In the West Bay the State of California is now building the Bayshore Freeway, which will join the elevated approach to the existing San Francisco-Oakland Bay Bridge at Fourth Street. Approaches for the combination of the existing and a Parallel Bridge are designed to take full advantage of Bayshore Freeway facilities. In addition to the single bridge connection now available at Fifth Street, there will be new ramps at Eighth Street, at 13th Street, at South Van Ness Avenue, and at all of the ramps of the Bayshore Freeway to the south. In downtown San Francisco east of Second Street, where there is now but one exit and one entrance for upper deck traffic,

Downtown San Francisco approaches for a second Bay crossing. For Parallel Bridge Plan model is correct as shown. For Southern Crossing Plan approaches will be modified in minor particulars





San Francisco approaches for a second Bay crossing. For Parallel Bridge Plan, 6½ Street connection to Southern Crossing (in center of picture) will be omitted. For Southern Crossing Plan, parallel bridge will be omitted

there will be three entrances and two exits at locations better suited to the local street and traffic pattern.

The Southern Crossing has also been provided with a necessary system of approaches in the West Bay. Connections are made to the street system near the bridgehead at Third and Army Streets. A freeway is provided to the west to join the Bayshore Freeway and principally serve traffic to the south of Army Street. Another freeway is provided to the north along Tennessee Street to serve the large volume of Southern Crossing traffic that will have origin or destination in downtown and the northwest parts of San Francisco. This freeway connects with the Bayshore Freeway in the block bounded by Sixth, Seventh, Bryant and Harrison Streets and thus makes available for the Southern Crossing the same ramps and street connections as were described for the Parallel Crossing.

These systems of ramps and freeways for either crossing are essential to properly serve transbay traffic and to avoid serious interference with local traffic on both sides of the Bay.

The combination of the existing and Parallel bridges makes possible one-way operation of each structure. Five wide lanes for passenger cars and two for trucks and busses will be provided in each direction. If a Southern Crossing is built, operation of the existing bridge must continue as at present. Passenger cars have three relatively narrow lanes in each direction without positive separation of opposing traffic, and trucks and busses use three lanes to carry vehicles both east and west. On the Southern Crossing, automobiles, trucks and busses will be mixed in the same lanes.

Insofar as traffic handling facilities at the ends of the two proposed crossings are concerned, both crossings have been equally well provided for. For the crossings proper, the Parallel Bridge plan offers conditions more conducive to safe and efficient operation.

The main bay crossing for a Parallel Bridge offers no problems that were not met and solved when the first bridge was built. The West Bay piers will have an average depth slightly greater than that of the original bridge, but as a whole, conditions will be quite similar.

Because of the unusual character of the Southern Crossing, much more time has been spent in developing plans. The particular difficulty has been to design large artificial islands which will serve as the termini of the subaqueous vehicular tubes under the main channel. These islands will, in themselves, produce heavy vertical loads on the bay bottom mud and, unless adequate precautions are taken, there will be extensive and long-time settlements. Studies have developed assured means for solving this problem. Other types of construction for this transition between the trestle approaches and the subaqueous tubes were extensively investigated but found less satisfactory.

Tubes for the main channel crossing and also the crossings under the Oakland Estuary are to be built by the pre-cast section method. No unusually difficult problems are anticipated except for the large quantities of material that must be handled. Dredged excavation and fill will approximate 21,400,000 cubic yards. In addition 101 concrete tube sections each 200 feet long and weighing in excess of 5,000 tons must be cast, floated into position and sunk to accurate location on the bay bottom. Other elements of construction are relatively simple.

It is concluded that the construction of either crossing is entirely feasible.

Cost Estimates

The total estimated cost of construction of the Parallel Bridge is as follows:

Main crossing	$104,255,000
San Francisco approaches including right of way	15,913,000

East Bay approaches including right of way	18,786,000
Engineering, administration, legal insurance and contingencies	16,060,000
Total cost	$155,014,000

The total estimated cost of construction of the Southern Crossing is as follows:

Main crossing	$88,351,000
San Francisco approaches including right of way	34,078,000
East Bay approaches including right of way	30,552,000
Engineering, administration, legal, insurance and contingencies	25,440,000
Total cost	$178,421,000

Thus the Southern Crossing, with approaches, is estimated to cost $23,407,000 more than the Parallel Bridge. Insofar as cost is concerned, therefore, a Parallel Crossing is to be preferred. While this is important, it should not serve to eliminate the Southern Crossing if traffic were comparably served and other considerations equal.

The estimated annual cost of maintenance and operation for the first year after any new crossings can be completed is $1,772,500 for the existing and Parallel bridges and $2,214,100 for the existing bridge and Southern Crossing.

Financing

It is assumed that financing of either of the additional crossings will be by the revenue bond method, with the earnings of the existing bridge and the new facility combined to secure the loan. No grants, interest-free loans from other sources, or other assistance has been assumed.

Based upon present financial market conditions and the sound earning record of the existing bridge, it is estimated that not to exceed $171,700,000 can be borrowed with tolls remaining at the present level. If tolls are raised to 35 cents, the upper limit of credit is estimated to be $194,800,000.

It will be necessary to include certain other items over and above actual construction costs to complete the financing of either crossing. The remaining debt on the original bridge is being paid off from current earnings but a decreasing balance will remain until early in 1952. On March 1, 1950, it will be approximately $20,505,000. Another obligation is the $6,288,550 which was loaned by the State for the approaches to the Existing Bridge. This must be repaid when a new crossing is financed.

Plans can be completed and construction on a Parallel Bridge started by March, 1950, unless unforeseen delays arise. In that event it will be necessary to borrow approximately $182,000,000. The new crossing will then be open for traffic about March, 1954. To meet this schedule it may be necessary to increase tolls to 35 cents.

If 25-cent tolls are to be retained, construction of a Parallel Bridge probably will have to be deferred until about March, 1951, and opening to traffic until March, 1955.

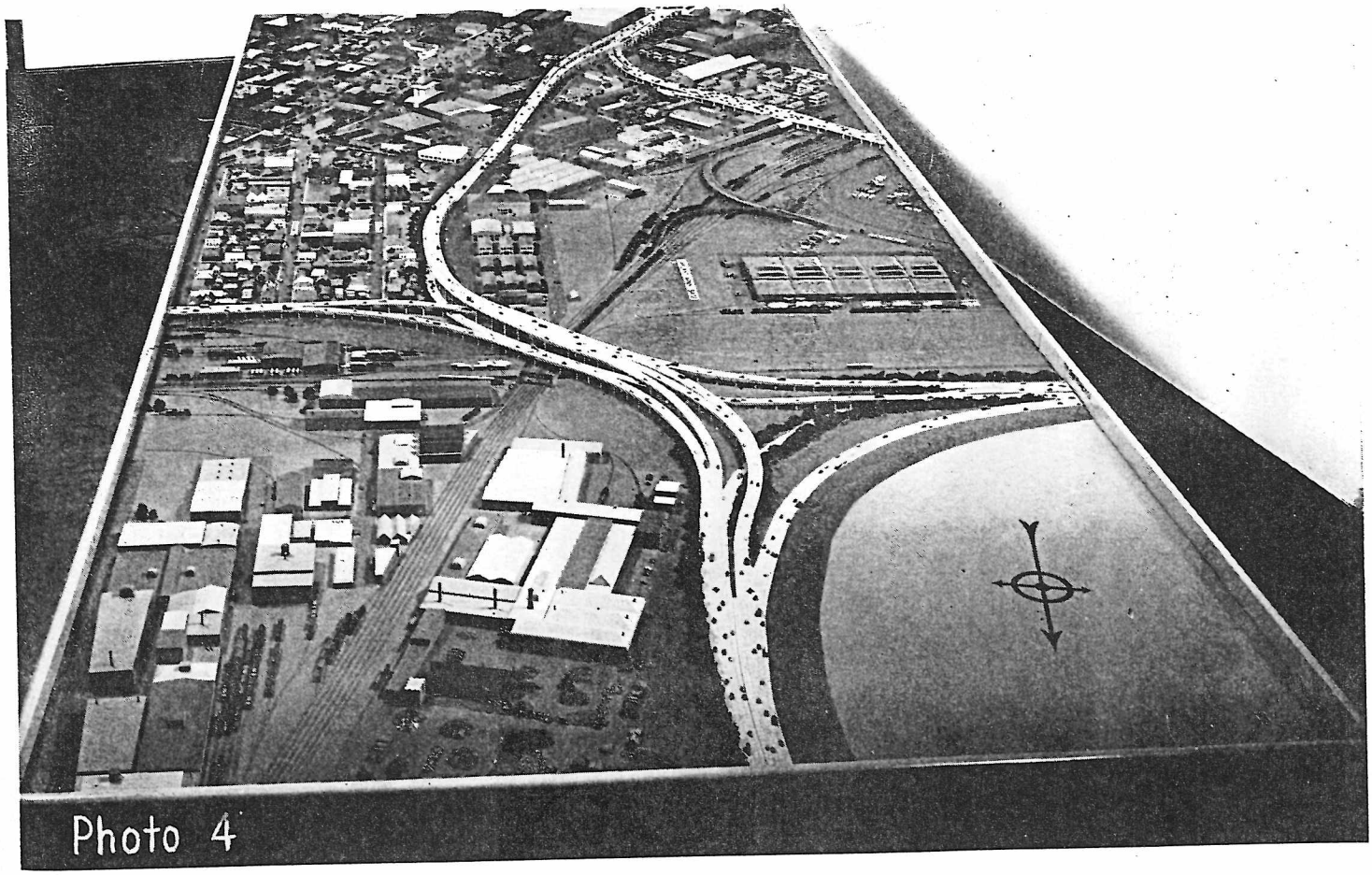
It does not appear possible to retain tolls at 25 cents if the Southern Crossing is built. The debt on the existing bridge must be further reduced before financing can be accomplished even with an increased toll. It is estimated that construction cannot start before March, 1951, which places the opening to traffic about September, 1956.

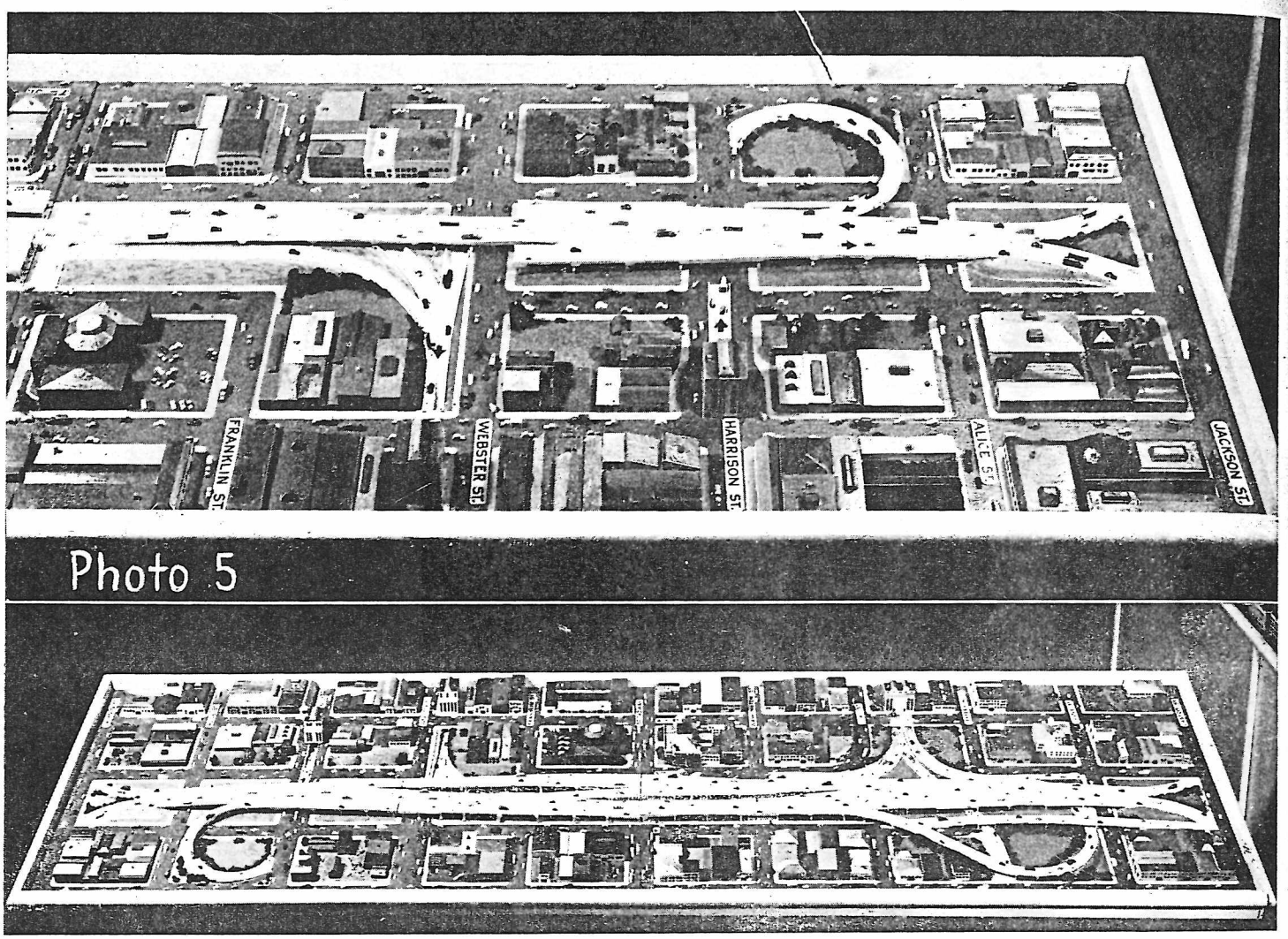
It is concluded that the Parallel Crossing can be financed with less difficulty than would be the case for the Southern Crossing.

Insurance

It does not appear that it will be possible to obtain insurance protection to the full amount that might be desired on the combination of either new crossing with the existing bridge. There is not sufficient insurance capacity in the world to provide much additional earthquake protection in this general area. Brokers estimate that, if a Parallel Bridge is built, the total coverage in addition to that now provided for the existing bridge will be about 10 percent. In the case of the Southern

Model of East Bay connections to Bay Bridge and Parallel Bridge. Photo taken looking south shows new third level of distribution structure, new Oakland Port of Embarkation connection to Cypress Street at 22d Street and new Cypress Street overpass





Upper—Model of Posey Tube on Harrison Street and new Webster Street Tube with connections to East Shore Freeway in Oakland. Part of Parallel Bridge project. Lower—Model of Posey Street Tube and twin tubes at Clay Street in Oakland, with connections to East Shore Freeway. Part of Southern Crossing project

Crossing this percentage is estimated to be between 15 percent and 20 percent.

By paying an increased premium estimated to be 100 percent, the insurance on the individual parts of the existing bridge and either additional crossing can be made equal to and perhaps a little greater than that now provided on the parts of the Bay Bridge.

It will be necessary to obtain approval of plans for navigation clearances from the Chief of Engineers and the Secretary of the Army for any crossing of the Bay proper or the Oakland Estuary.

It appears that no additional state legislation is necessary to permit the construction of either crossing.

Federal legislation is recommended to obtain rights of way for a Parallel Bridge across Yerba Buena Island and is desirable for rights of way through the Oakland Army Port of Embarkation for the Parallel Bridge, and through the Alameda Intransit Depot (Army) for either crossing.

Federal legislation to repeal the present law placing restrictions on the collection of tolls on the San Francisco-Oakland Bay Bridge after it has amortized its own cost is desirable.

National Defense

From a study of reliable data and discussion with experienced military personnel, it is concluded that:

a. Bay crossings would not be primary targets in the event of war;
b. Destructive damage to a single bridge would be difficult to achieve;
c. Destructive damage to one of the three subaqueous tubes of the Southern Crossing is somewhat more likely than to a bridge, however, simultaneous destructive damage to all three tubes from existing bombs is only a remote possibility;
d. The possibility of simultaneous destruction of parallel bridges from any existing bombs, except an improbable close hit by an atomic bomb, does not exist;
e. There is no possibility of simultaneous destruction from a single bomb of any kind now known to the existing San Francisco-Oakland Bay Bridge and a Southern Crossing tube;
f. Sabotage of any single crossing is possible but not likely if adequate and proper precautions are taken.

Insofar as service to military installations in the Bay Area is concerned, the only appreciable advantage lies to the Navy in that a Southern Crossing would afford direct connection between the Alameda Naval Air Station and the San Francisco Naval Shipyard at Hunter Point.

From the foregoing it is concluded that the Southern Crossing is preferable from a national defense standpoint but that the margin is small. The hazard of simultaneous destruction or serious damage to parallel bridges is so unlikely that a Parallel Bridge should not be eliminated in favor of a Southern Crossing if the latter does not serve transbay traffic within reasonably comparable limits.

Time Estimates

For the Parallel Bridge the estimated time of construction to serve traffic is four years. Barring unforeseen delays, plans can be available and construction started by March, 1950, so that the new facility can be available about March, 1954.

Plans for the Southern Crossing can be completed by about July, 1950, but construction cannot be commenced before March, 1951, because financing before that date does

not appear possible. The construction period ior to opening to traffic is estimated to be e and one-half years. This longer time results because the settlement of the artificial islands must be largely complete before the ɔe sections are placed. Opening of this ɔssing for traffic will be possible by about September, 1956. This is two and one-half years later than the estimated completion date for the Parallel Bridge.

From the viewpoint of earliest possible relief of congestion on the San Francisco-Oakland Bay Bridge and improvement of approaches on both sides of the bay—particularly downtown San Francisco—the Parallel Bridge is to be preferred.

Recapitulation

A recapitulation of the factors contributing to the recommendations is shown in the following Table 15.

TABLE 15
RECAPITULATION
Factors Contributing to Recommendation

	If Parallel Bridge is built first	*If Southern Crossing is built first*
. Estimated date when congestion will be effectively relieved on San Francisco-Oakland Bay Bridge	March, 1954	Never
2. Estimated date when San Francisco-Oakland Bay Bridge and new crossing will both be inconveniently congested	Not before 1970	1965
. Proportion of transbay traffic best served by each crossing	82%	18%
. New traffic induced because of improved service (in percentage of total transbay traffic)	None	1%
. Will produce additional general congestion on city streets on either side of Bay	No	No
ɔ. Two-way traffic on existing bridge will be discontinued	Yes	No
7. Passenger autos, trucks and busses will be mixed in same traffic lanes on new crossing	No	Yes
8. Will produce most revenue and estimated amount per year	----------	$20,000
. Total estimated construction cost including approaches, right of way, and engineering	$155,014,000	$178,421,000
. Estimated annual cost of maintenance and operation	$1,772,500	$2,214,100
. Estimated earliest date for financing	March, 1950	March, 1951
12. Time of construction to serve traffic	4 years	5½ years
13. Earliest date to open for traffic	March, 1954	September, 1956
. Minimum toll required to finance	25¢	35¢
. Amount of insurance that can be obtained on existing bridge plus new crossing, over and above present insurance	10%	15% to 20%
16. State legislation required	No	No
17. Federal legislation	Desirable	Desirable
18. Department of Army permit for navigation clearances required	Yes	Yes
. National defense	----------	Preferable
Recommended order of construction	1	2

Deep excavation work in progress on new freeway near Soquel, looking toward Santa Cruz *(see Page 10)*

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A Report to the
City Planning Commission on a

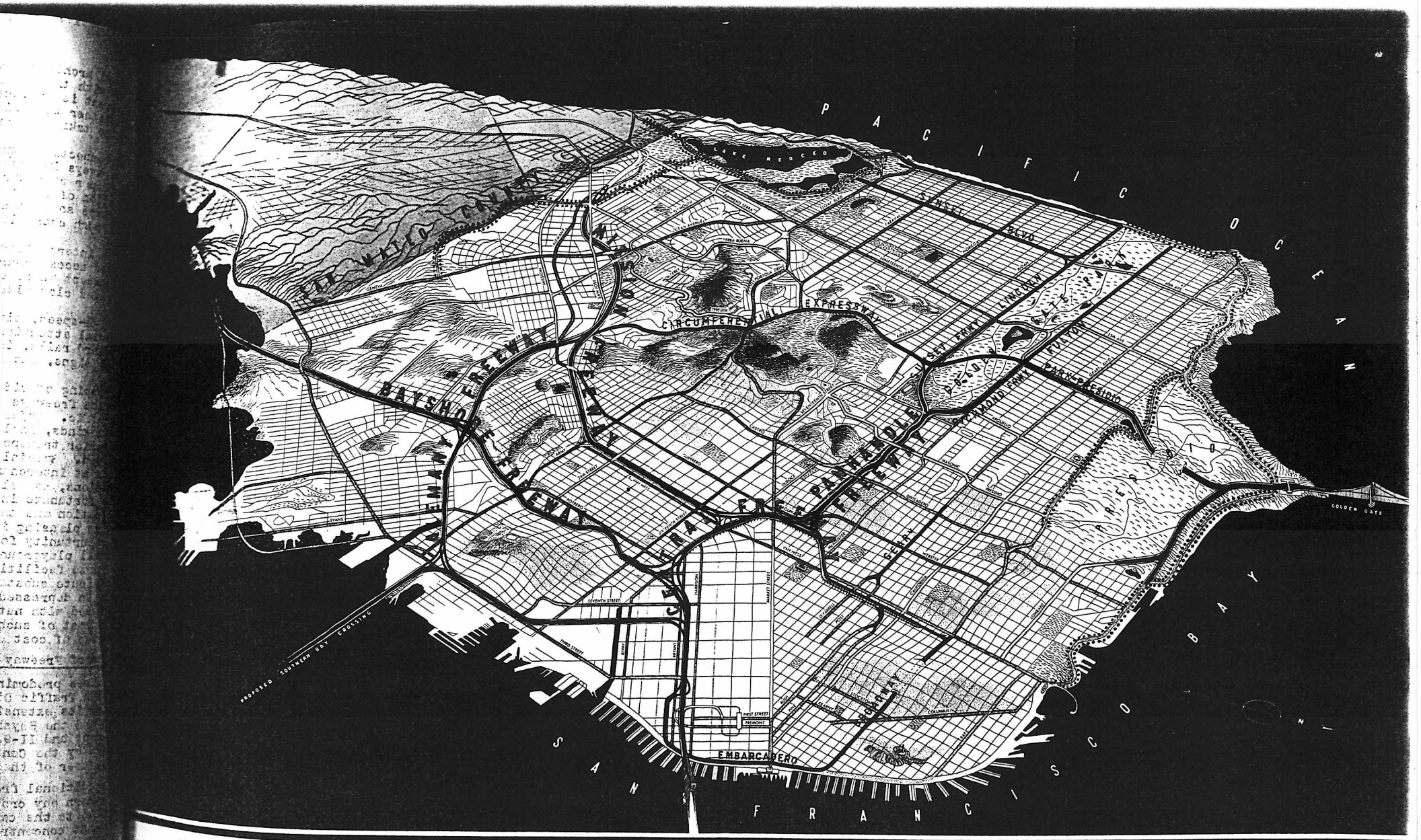
TRANSPORTATION PLAN FOR SAN FRANCISCO

NOVEMBER 1948

DEC 23 1963
SAN FRANCISCO

De Leuw Cather and Company
Consulting Engineers

Ladislas Segoe and Associates
Consulting City Planners



DE LEUW, CATHER & CO., CONSULTING ENGINEERS
LADISLAS SEGOE, CONSULTING CITY PLANNER

TRAFFICWAYS 11 PLATE 9

SAN FRANCISCO DEPARTMENT OF CITY PLANNING

AIRVIEW OF CITY SHOWING TRAFFICWAYS

FREEWAYS
EXPRESSWAYS
PARKWAYS
MAJOR THOROUGHFARE
SECONDARY THOROUGHFARE

Definition of "Freeway"

By "Freeway" is meant a divided highway completely cut off from adjoining property with fully controlled entrances and exits and having no cross traffic at grade, and no stopping, parking, traffic signals, left turn movements, or pedestrians. (Such a definition has recently been adopted by a Committee of the American Association of State Highway Officials). Freeways usually are in open cut or on elevated structures, sometimes at ground level with grade separations at important crossings and other cross streets closed. A freeway has the advantage over the usual type of major street of providing for uninterrupted, high speed movement with a high degree of safety and high traffic capacity. From the community development standpoint, freeways help to relieve residential and local business streets of detrimental through traffic. They can be used to separate business or industrial districts from residential areas, or to screen off railroads. When properly located they can be instrumental in defining the boundaries of residential communities and neighborhoods.

The freeway locations proposed herein have been selected not alone for their service value to major traffic movements, but also to fit into and help to further realization of the overall community Master Plan. Such factors as topography, the presence of natural open spaces, the density and quality of existing private development that would have to be cleared away, the beneficial or detrimental effect upon remaining property, the value of each route location in promoting a desirable type of community development or redevelopment, its value in shaping the city into a logical arrangement of communities and neighborhoods—all these have been given due consideration. Fortunately it was possible due to proper timing to fully coordinate the Trafficways Plan with the Master Plan of Land Uses, also currently under preparation by the Department of City Planning.

Consideration has been given to the stage development of each route. Under such a program, each unit as constructed would serve as a needed and efficient traffic artery until the balance of that route or of the system could be completed.

The locations shown for the various freeways on the plan and profile sheets appended hereto are the results of preliminary studies only. Field surveys of the individual routes required for design purposes may lead to deviations in alignments from those shown. The preliminary studies prove, however, that rights-of-way on alignments in the general locations indicated can be acquired at reasonable cost for freeways conforming with basic design standards.

Design Standards

Basic standards used in the location and design of the freeway system conform to those adopted by the American Association of State Highway Officials for the Inter-Regional Highway System except in the matter of vertical clearances in which the California standard is somewhat greater than tha prescribed. The basic standards recognize that in certain instances topography, property values, or other compelling reasons may prevent absolute adherence to the standards recommended. Otherwise these standards have been found necessary for the safe and expeditious movement of the large volumes of high speed mixed traffic anticipated.

The established criterion for urban sections of the interstate system requires that where traffic volumes are less than 20,000 vehicles daily, two lanes each 12 feet in width are required in each direction, separated by a suitable median strip or central mall. Where traffic volumes are in excess of 20,000 vehicles daily, three or more lanes in each direction are required.

In applying the limited access feature wherein the right of access is confined to designated ramps or interchanges, a wide right-of-way is highly desirable. Sufficient width should be obtained to provide ample room for pavements, shoulders, landscaped side slopes, service roads and interchange ramps. Typical cross sections illustrating these features are shown on Plate II-11.

The accepted standards for horizontal and vertical curvatures and sight distances must be adhered to in order to provide a highway which will carry safely large volumes of mixed traffic at a designed speed of 50 m.p.h. The use of spiral transitions on horizontal curves is mandatory.

Profiles of the freeways have been controlled to a great extent by topography and by existing highways and railroads to be crossed. Grades have been reduced substantially below those of parallel streets, however, by using elevated and depressed sections alternately. A maximum gradient of three per cent has been used wherever possible since this gradient can be negotiated by trucks in high gear. It has been necessary in some instances, however, to use gradients as great as 5.6 per cent for short distances on up-grades. The gradient of ramps has been held within the standards prescribed: 6 per cent for up ramps and 8 per cent for down ramps.

Special architectural treatment of all structures to make them harmonious with their surroundings is contemplated, and the cost of such treatment is included in the cost estimates. The use of retaining walls rather than side slopes will be necessary in some instances to avoid the taking of prohibitively expensive land and buildings.

Ramp connections must be provided for egress and ingress at important highways intersected. These ramps will connect to the express roadways proper by means of long acceleration and deceleration lanes. The connection of ramps to existing streets has been considered in locating ramps so that adequate provision for traffic movements can be made through channelization, one-way control, or other means.

At the intersections of freeways, interchanges are provided with full limited access characteristics. These are directional in all instances except where a minor volume of traffic is to be accommodated in which cases cloverleaf turns are sometimes applied.

The high-speed, high-capacity characteristics of freeways requires special attention to such auxiliary features as right-of-way fencing, guard rails, integral pavement markers, jumbo warning and directional signs, and roadway lighting.

Landscaping of side slopes, medial dividers and marginal strips will give the freeways a park-like appearance and muffle the hum of highway traffic. Adjacent property will be desirable for new buildings of all kinds, including residential and institutional, because of the superior transportation facilities afforded and the attractive view provided. Special landscape treatment is recommended for the large areas at interchanges and access points to prevent erosion at these locations, as well as for the aesthetic value. California is especially fortunate in the great variety of plants available for such application and the year-round growing season which will keep the freeways pleasing in appearance throughout the year. This presents an opportunity for the development of incidental improvements such as small playgrounds for children and sitting parks for older people. These facilities located in a broad attractive green strip would contribute substantially to the improvement of living conditions and values in depressed neighborhoods. These areas should be sodded and landscaped with native plant material arranged in natural groups. The cost of such incidental improvements has been included in the estimates of cost of freeways.

Description of Freeway Routes

The three predominating flows of traffic radiating from the Metropolitan Traffic District will be accommodated on the Panhandle Freeway and its extensions to the west, the Mission Freeway to the southwest and the Bayshore Freeway to the south. See Plates II-8 (folding map) and II-9. These three great thoroughfares will be recirculated by the Central Freeway which will function as a distributor and diffuser of these heavy traffic concentrations.

Two additional freeways are required to serve properly the proposed southern bay crossing. The Marginal Freeway will provide a direct route to the eastern fringe of the downtown district providing entry to that concentrated area over the lightly traveled streets

near the waterfront and relieving the thoroughfares leading to the congested downtown area from the south and the west. The Alemany Freeway provides a direct connection for vehicles destined either to the southern crossing from the south and the southwest or to the Marginal Freeway. This will reduce the traffic on the Bayshore, Mission and Central Freeways to practicable levels.

Central Freeway

This all important freeway will start at Broadway just east of Van Ness Avenue. See Plates S-1 and S-2. The roadways will be depressed from Broadway to Clay Street at which point they will be carried on an elevated structure on a right-of-way of restricted width parallel with and between Van Ness Avenue and Polk Street. A connection to a portal in the center of Van Ness Avenue north of Broadway will be made by a short tunnel. A spur between Pine and Bush streets will accommodate traffic to and from the downtown area. This spur will take advantage of topography to reduce grades for traffic which will be delivered to the existing street system near Hyde Street.

The route will swing to the southwest in the block between Eddy and Turk Streets, crossing Van Ness Avenue and continuing to a location in the block between Gough and Octavia Streets at Fulton Street. The route then extends southward to a location just south of Market Street providing space for the necessarily elaborate interchange with the Panhandle Freeway. This entire section will be elevated - largely on solid fill with gentle side slopes which will afford an opportunity for attractive landscaping.

From this point the Central Freeway will swing easterly as an elevated structure making connections with the Mission Freeway and utilizing the right-of-way now being acquired for 13th Street between Valencia and Folsom Streets. The route will then continue to an interchange with the Bayshore Freeway south of Bryant Street and centered approximately on 9th Street. At this point the Central Freeway loses its identity as such, becoming an extension of the Bayshore Freeway to the approaches to the San Francisco Bay Bridge.

This great central artery constitutes the major feature of a grand circumferential distributor loop around the Metropolitan Traffic District. Completion of the loop involves the use of the Marginal Freeway from the bridge approaches to the vicinity of Market Street, the Embarcadero from this point to Broadway, and Broadway from The Embarcadero to Van Ness Avenue.

Normal weekday traffic on the several sections of the freeway system has been estimated at both 1947 and at 1970 traffic levels. Allocations of traffic have been made by detailed review and study of the trips between origins and destinations, at external points and in the numerous zones in San Francisco. These estimates are summarized on Plate II-10. The high economic value of the Central Freeway is shown by the fact that it will attract the greatest volume of traffic of any of the freeways in the system.

Bayshore Freeway

The Bayshore Freeway has now been completed through a portion of San Mateo County and is under construction in South San Francisco.

plans for extension of the route through the city to the San Francisco Bay Bridge prescribe a route to the west of Bayview Park in the vicinity of the present Bayshore Boulevard at Third Street. From this point, the route continues northerly parallel to and on the west side of Bayshore Boulevard to Army Street. The highway will be alternately in cut and on fill to reduce the grades and provide full limited access characteristics with all cross traffic carried over or under the freeway.

The Bayshore route will cross Army Street above grade, swing to the east of San Francisco Hospital with a depressed roadway and then westward around the hill and northward in the blocks between San Bruno Avenue and Vermont Street. At Mariposa Street the highway will become an elevated structure in order to clear all the railroad spurs in the highly industrialized area from here north.

The Bayshore Freeway connects with the Central Freeway in the vicinity of 9th and Bryant Streets, as previously stated, from which point it continues on fill and viaduct to the Bay Bridge.

Mission Freeway

Traffic studies show that a second freeway will be needed to provide adequately for traffic from the south. Anticipating this situation, several agencies have studied a possible relief freeway along the route of the original Mission Road or El Camino Real. The outer portion of this route is now traversed by U.S. Highway 101 through the Daly City gateway and down the Peninsula. This is the direction which major residential growth must necessarily take in the future. The land use and population studies indicate not only a large existing population tributary to this route but one that will increase substantially in the near future.

The route here recommended for the Mission Freeway lies between Mission Street and South Van Ness Avenue and extends through the Bernal Cut and along the old right-of-way of the Southern Pacific Railroad (see Plates S-3, S-4, and S-5). Business along this rail line has been declining and portions of the line have been abandoned. The railroad right-of-way should be acquired together with sufficient adjoining property to provide a freeway right-of-way about 300 feet wide. The adjacent property is sparsely developed and its acquisition cost should be extremely low compared to any other possible route.

Through the Mission District from 16th Street to 25th Street, this freeway would be located in open cut with sloping sides just back of the Mission Street business section where residential values are comparatively low. This 250-foot wide landscaped open strip will effectively protect the remaining residential area from further business encroachment and encourage its ultimate redevelopment into modern residential neighborhoods. Acquisition of right-of-way may be planned so as to provide needed off-street parking areas for the Mission Street stores. Between 16th and 14th Streets the freeway grade would rise to an elevated structure connecting with the Central Freeway interchange north of 14th Street.

Between 25th Street and the Bernal Cut, the freeway would have a side hill location passing over Army Street and under Mission Street.

...ple interchange connections to Army Street are important to facil-...te movements of traffic from the projected Southern Bay Crossing ...destinations to the north conveniently reached by the Mission and ...ntral Freeways.

Southwest of the Mission Street crossing the freeway would follow ... present railroad line and grade in general being alternately in ..., to fill, or side hill sections. The project is planned with a ...ter mall of generous width for rapid transit operation as set forth ...Chapter III of this report. All of this route should be attractive-...landscaped and desirable views preserved. The side hill sections ...r Geneva Avenue have been planned on two levels to reduce costs and ...o to simplify the necessary rail connection into the Municipal Rail-...y central repair shops.

West of San Jose Avenue and Alemany Boulevard, the freeway would ...rminate for the present with a direct connection into Alemany ...levard and Sagamore Street. The City and State Division of High-...ys are planning a grade separated connection between Alemany ...levard and Junipero Serra Boulevard. Ultimately this route may ... developed as a freeway southward into San Mateo County.

Proposals to develop Alemany Boulevard into a freeway from ...ission Street to San Jose Avenue, have been considered and discarded. ...his 100-foot thoroughfare is now lined for its entire length with ...elatively new and modern homes. Widening to a freeway width of 250 ...o 300 feet would be costly, would result in a serious loss of useful ...using, and would disrupt the existing local street pattern. It ...ould better be retained as a primary feeder for the adjacent neigh-...rhoods and a route for short distance trips, with further parkway ...eatment when present through traffic has been diverted from it to ...e freeway.

Conversion of the railroad line into a park-like freeway should ...ve a beneficial effect upon this section of the city. It should ...timulate the opening up of desirable home sites nearby where now the ...nd is undeveloped. Existing major streets will be relieved of ...hrough traffic and will thus become more attractive for residential ...e or business development, as the case may be. The freeway would ... so located as to provide a logical separator between residence and ...siness areas, or between different residential neighborhoods.

...nhandle, Richmond and Sunset Freeways

Except for one short section of the Central Freeway, the greatest ...ed for freeway construction based on estimated traffic volumes is ...tward from the business district into the Richmond and Sunset Dis-...icts. Several proposals have been made heretofore for a freeway on ...e line of the Golden Gate Park Panhandle between Fell and Oak ...reets, thence dividing into two branches on the north and south ...des of Golden Gate Park, respectively. Such a freeway is sound ...rom all viewpoints and is here recommended (see Plates S-6,S-7 and ...-8). This route takes advantage of existing public open spaces ...st of Baker Street and the eastern part lies in the area recently ...eclared by the Board of Supervisors to be a Redevelopment Area. At ...e eastern end, the Panhandle Freeway will connect into the Central ...reeway by means of a complete interchange. A short distance west, it

...es into a depressed section. The grade is at or below street grade ... as to preserve the park-like setting - so desirable in this area. ... section through the Park Panhandle is laid out to follow present ...sting roadways as nearly as possible, although some widening and ...ightening will be necessary.

West of Stanyan Street, the Richmond and Sunset Freeways hug the ... boundaries as closely as the topography and present developments ...mit, utilizing partly the existing right-of-way along both Fulton ...et and Lincoln Way. Connections are planned to Arguello Boulevard, ... Avenue and Park Presidio Boulevard from the Richmond Freeway with ... separations at all three locations. West of Park-Presidio ...levard connections are made to the Fulton Street roadway and to ... Park Drive. These thoroughfares are adequate to serve estimated ...ffic needs for a considerable period. Ultimately, however, a wider ...way will be needed, which can be provided with but little encroach...nt on park area.

A special layout has been planned for the Sunset Freeway in the ...inity of Kezar Stadium. The grade of the eastbound express road...y is one level below the existing park drive opposite the stadium ...d that of the westbound roadway one level farther down. This fits ... topography, eliminates any major disturbance to present facilities ... permits the construction of a special graded bus terminal loop - ...necessity for expeditious handling of large crowds leaving the ...dium.

A grade separated connection is planned leading to the 5th ...enue-6th Avenue expressway. This conforms to the presently planned ...velopment of this facility - the utilization of this pair of ...reets for one-way operation.

A second grade separation for the Sunset Freeway is planned at ...th Avenue. The project will terminate here. As in the case of the ...chmond Freeway, existing facilities along Lincoln Way west of this ...int will be adequate for an indefinite period.

Although these freeways will occupy some park land in Golden Gate ...rk and the Park Panhandle, this will be compensated by the removal ... heavy through traffic that now regularly uses the park drives, thus ...terfering with and constantly endangering the recreational users of ... park. In 1945 this traffic was found to exceed 30,000 cars per ... at the Main Drive entrance on Stanyan Street. Portions of the ...rk Panhandle that would be used for freeway construction would be ...re than replaced by the extension of park treatment eastward along ...th sides of the freeway, between Fell and Oak, to Octavia Street.

...lemany Freeway

Alemany Boulevard between Mission Street and Bayshore Boulevard ... recently been improved to essentially freeway standards. Right ... access to this highway has not been acquired as part of the im...provement, however, and the utility of the thoroughfare may be dras...tically reduced during the next few years by the development of ...jacting property. Steps should be taken, therefore, to acquire a ...rip of land on each side of the highway with appropriate surface ...rives, if required, to restrict traffic movements to and from the ...ighway to prescribed locations. Special facilities for pedestrians ...hould be provided.

It is also recommended that appropriate interchanges be provided with the Mission Freeway and with the Bayshore Freeway - see Plates S-9 and S-10. This freeway should be extended at elevated grade approximately along the line of Selby Street from Bayshore Freeway to connection both with the Marginal Freeway and with the Southern Bay Crossing.

Marginal Freeway

The Division of San Francisco Bay Toll Crossings of the State Department of Public Works has made detailed preliminary studies covering additional crossings of the bay to relieve the present peak hour congestion on the San Francisco-Oakland Bay Bridge. These consider a second bridge, parallel to the present structure, and a new crossing some distance south extending east from San Francisco at a location near Army Street. This problem will be discussed later.

A suitable connection providing for the expeditious movement of traffic from the southern crossing to the Embarcadero and downtown streets near the waterfront properly is considered as a necessary part of that project. Preliminary studies of the line and grade of this facility, which is designated as the "Marginal Freeway" have been made by the Division of Bay Toll Crossings. We have been furnished information from time to time on the several alternates considered and, therefore, have undertaken no independent studies. Two alternate routes have been developed and analyzed.

The first, with an alignment generally along the waterfront, required a high level bridge over the China Basin channel.

The second route follows Tennessee Street from Army Street northward to Mariposa Street, then extends just west of Sixth Street to a connection with the distributor loop. Direct connections to and from the east only are provided here. This is advisable because of the desirability of routing Marginal Freeway traffic to the east around the distributor loop instead of further congesting the heavily traveled westerly sections.

An extension north along the Embarcadero would consist of an elevated structure under the existing bridge approach coming to grade a short distance south of Market Street. Its extension to a point north of Market Street would be accomplished by an enlargement of the existing underpass in front of the Ferry Building.

The Sixth Street alternate route would be considerably cheaper than the waterfront route and this alignment, therefore, is recommended.

As traffic on the inner sections of the Bayshore and Mission Freeways begins to reach the inevitable saturation point, relief routes will become highly necessary. The Marginal and Alemany Freeways would handle traffic to the 3rd Street industrial district, the rail and motor freight houses, the wharves, lower Market Street and North-of-Market areas which otherwise would overload the Mission or Bayshore and the Central Freeways.

...re Additions

Plate II-8 (folding map) indicates by dashed lines possible ... additions to the network of freeways which may become neces- ... and desirable after 1970. It is impossible to predict at this ... which of these routes will ultimately be required as full limit- ...cess highways or the order in which they should be built. ...er is it feasible to select the exact location for these routes, ... estimate their cost. The alignments shown are principally ...ional rather than specific as to the most desirable location ... the routes.

...ffic Estimates

The volume of traffic on the proposed freeway system will in- ...ase considerably during the life of the structures over that ...imated on the basis of 1947 O-D survey. It is important to know ... character of this trend to preclude any possibility that the ...ways will be either over-designed or under-designed. Projections ...future traffic have been carried to the year 1970.

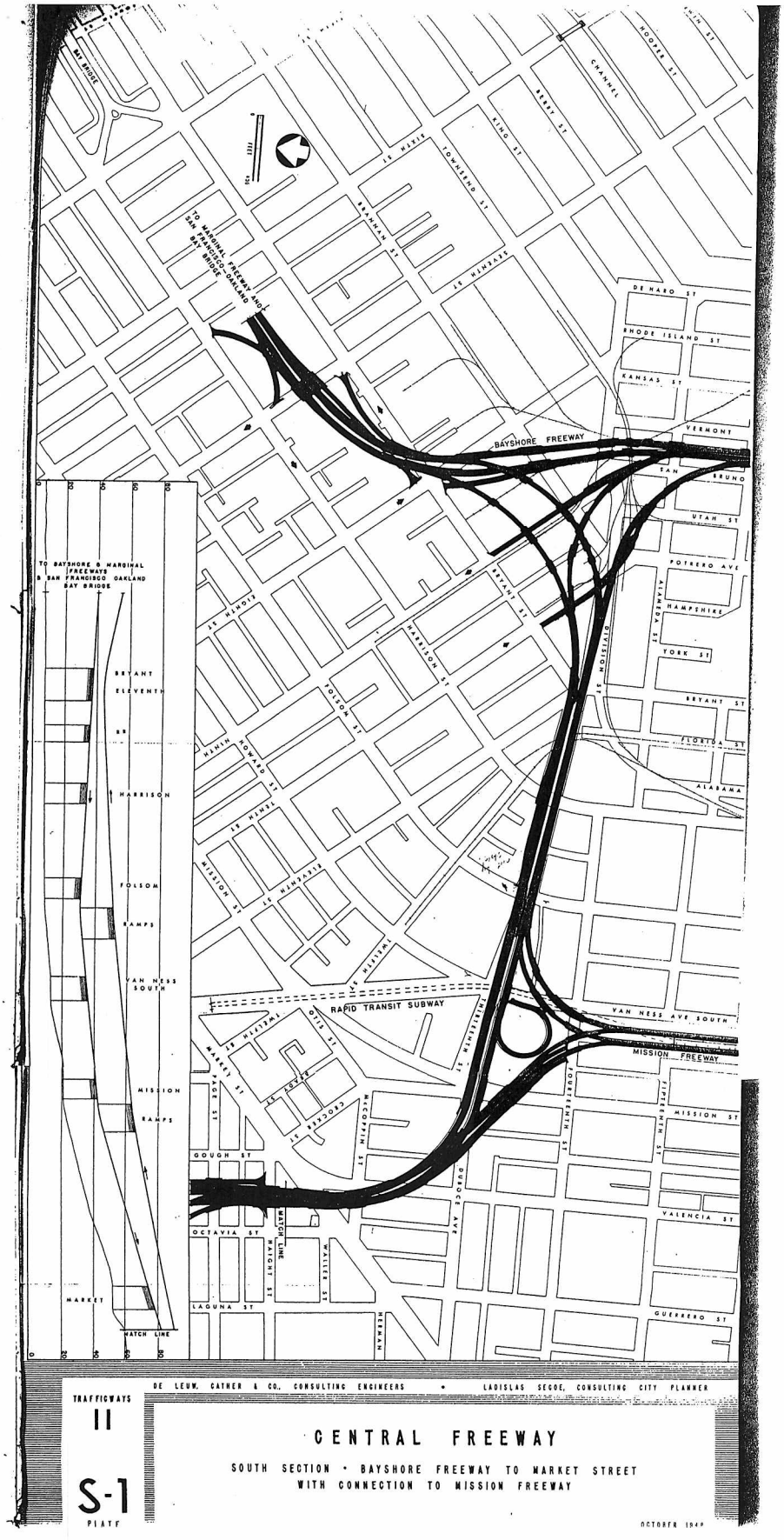
Many factors have been taken into consideration in expanding ... traffic volumes to 1970 levels, including population growth, ...ease in vehicle registration, possible decentralization, improve- ...ts in the transit system, and limitations of street capacity and ...ing facilities in the Metropolitan Traffic District.

The population of San Francisco proper is estimated to increase ...ut 12 per cent between 1947 and 1970. Population changes in the ...tions served by the individual freeway routes may deviate widely ... the overall figure, however. Greater increases will occur in ... contiguous portion of the metropolitan area beyond the south city ...its and across the bay. The 1970 population potential of each of ... survey segments both in the city and in the area beyond has been ...fully estimated -- in the city by the Department of City Planning ... in the suburban areas by the local planning departments on the ...is of availability of building sites, present trends, known plans ... industrial expansion, and other pertinent factors. This study ... been invaluable to the consultants in their effort to assign ...ure traffic to each of the freeway routes.

In assigning traffic to the different sections of the freeway ...em, it was assumed that the proposed routes would be used when- ...f time would be saved in doing so, even though the distance was ...what longer. At the same time, consideration was given to the ...tinued use of good streets and the use of the surface thorough- ...es recommended for improvement.

The accompanying flow map (Plate II-10a) shows estimated ...mes of traffic which would use the proposed system of freeways ...ne estimated 1970 traffic levels.

Plate II-10b shows the estimated 1970 two-way movements of ...ffic on each section of the freeway system and on each pair of ...ess ramps. It is on the basis of such information that the ...ommended priority of construction has been prepared and the number ...lanes to be provided in each section has been determined.



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TRAFFICWAYS

II

S-1

PLATE

CENTRAL FREEWAY

SOUTH SECTION • BAYSHORE FREEWAY TO MARKET STREET
WITH CONNECTION TO MISSION FREEWAY

OCTOBER 1949

11 11
16 blocks n/s

1.18
11)13-
11
20
11
90

118%

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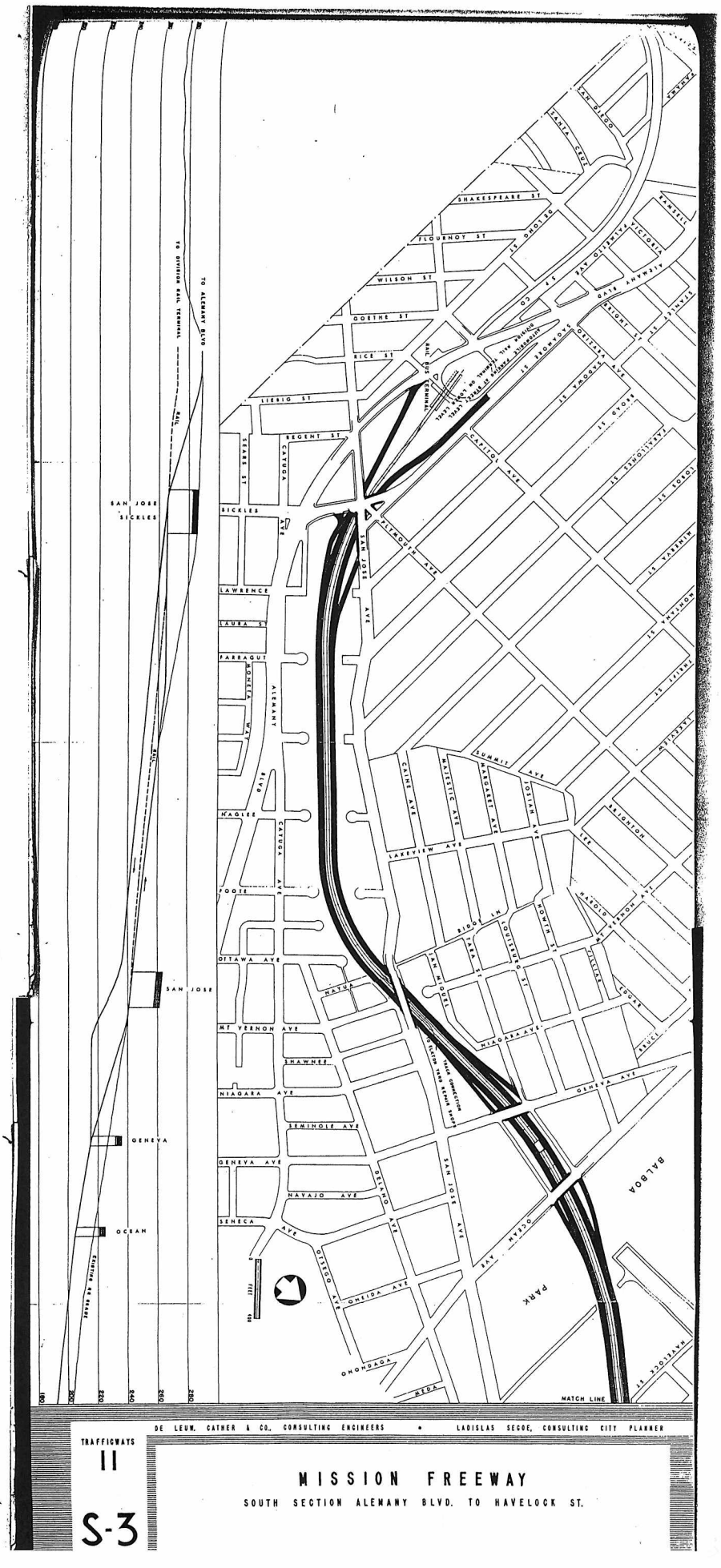
TRAFFICWAYS II

S-2

CENTRAL FREEWAY

NORTH SECTION - MARKET STREET TO BROADWAY

CONNECTIONS TO PANHANDLE FREEWAY



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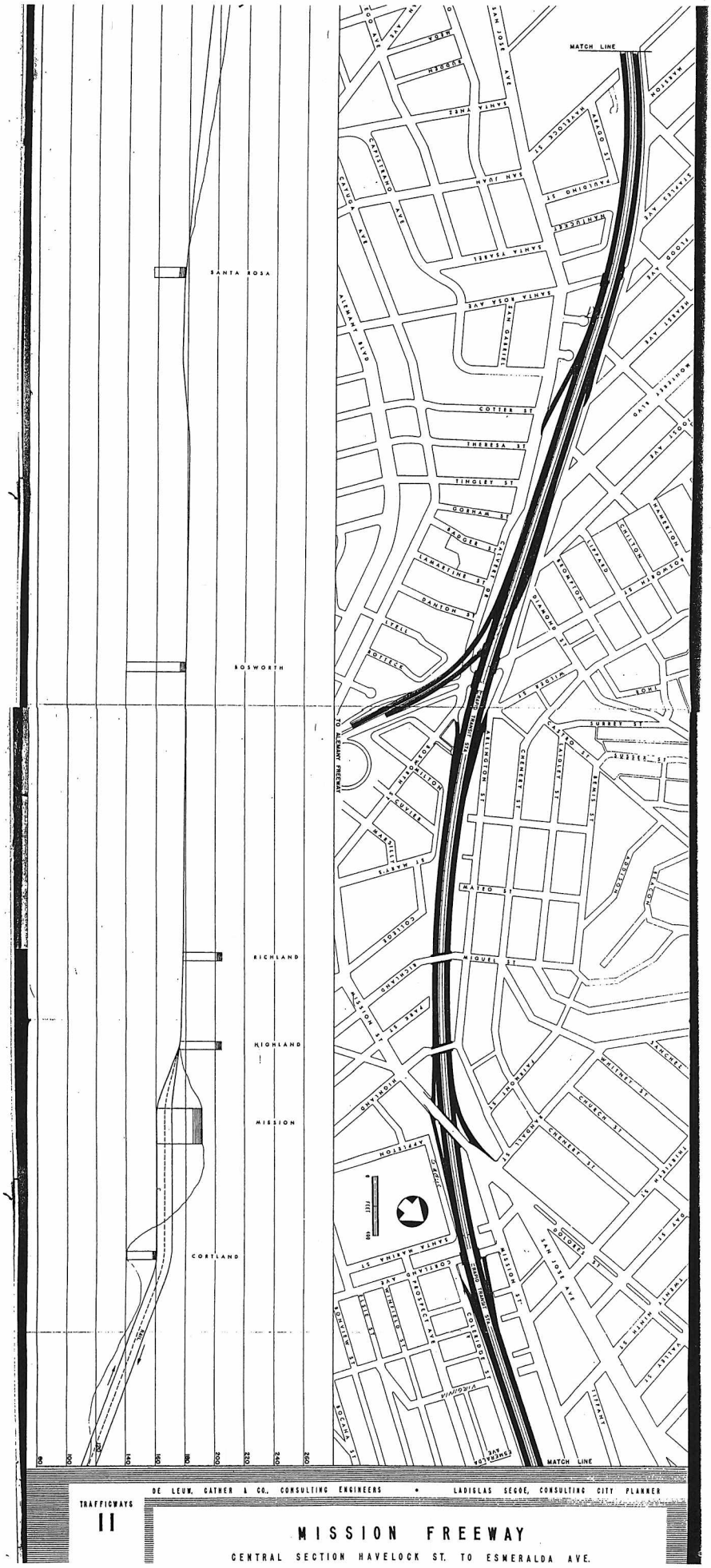
TRAFFICWAYS

11

S-3

MISSION FREEWAY

SOUTH SECTION ALEMANY BLVD. TO HAVELOCK ST.



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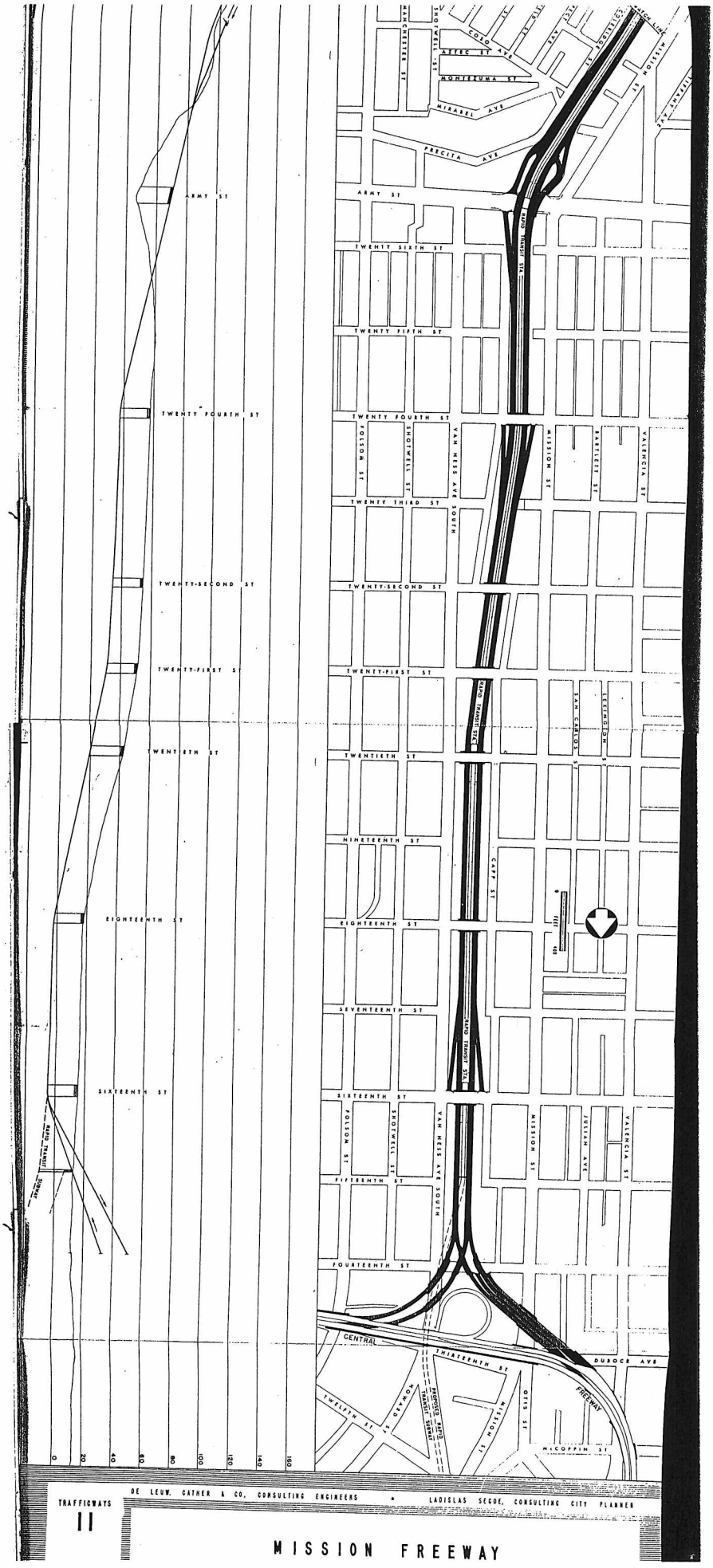
TRAFFICWAYS

II

MISSION FREEWAY

CENTRAL SECTION HAVELOCK ST. TO ESMERALDA AVE.



TRAFFICWAYS

II

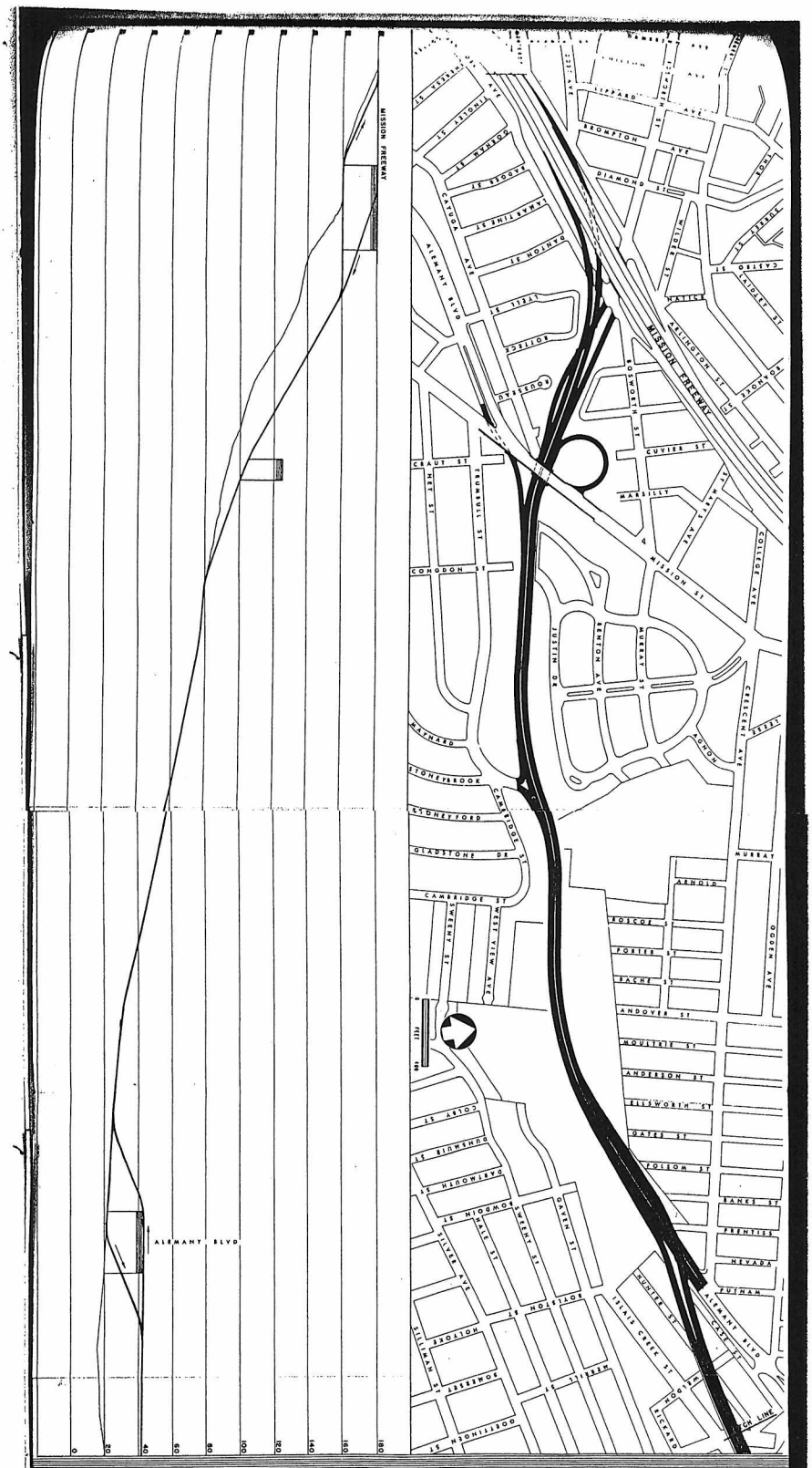
DE LEUW, CATHER & CO, CONSULTING ENGINEERS • LADISLAS SEGOE, CONSULTING CITY PLANNER

MISSION FREEWAY

GOLDEN GATE PARK
PARK PRESIDIO
EIGHTH AVE
ARGUELLO BLVD
STANYAN ST
DE YOUNG MUSEUM
CONSERVATORY
BUS STATION
MT LICK RESERVOIR
TO PANHANDLE FREEWAY
PARK PRESIDIO BLVD
FULTON ST
EIGHTEENTH AVE
SEVENTEENTH AVE
SIXTEENTH AVE
FIFTEENTH AVE
FOURTEENTH AVE
FUNSTON AVE
TWELFTH AVE
ELEVENTH AVE
TENTH AVE
NINTH AVE
EIGHTH AVE
SEVENTH AVE
SIXTH AVE
FIFTH AVE
FOURTH AVE
THIRD AVE
SECOND AVE
ARGUELLO BLVD
MCALLISTER ST
GOLDEN GATE AVE
WILLARD ST
PARSONS ST
STANYAN ST
FEET
DE LEUW, CATHER & CO., CONSULTING ENGINEERS
LADISLAS SEGOE, CONSULTING CITY PLANNER
TRAFFICWAYS
II
S-6
RICHMOND FREEWAY
PARK-PRESIDIO BLVD. TO PANHANDLE FREEWAY

TWENTY-FIRST AVE
TWENTIETH AVE
NINETEENTH AVE
EIGHTEENTH AVE
SEVENTEENTH AVE
SIXTEENTH AVE
FIFTEENTH AVE
FOURTEENTH AVE
FUNSTON AVE
TWELFTH AVE
ELEVENTH AVE
TENTH AVE
NINTH AVE
EIGHTH AVE
SEVENTH AVE
SIXTH AVE
FIFTH AVE
FOURTH AVE
THIRD AVE
SECOND AVE
ARGUELLO BLVD
HILLWAY
WILLARD ST
STANYAN ST
SHRADER ST
PEDESTRIAN OVERPASS
UNDERPASS
OVERPASS
LINCOLN WAY
CARL ST
PARNASSUS AVE
FREDERICK ST
KEZAR STADIUM
KEZAR DRIVE
BOTTOM OF SLOPE
GOLDEN GATE PARK
MUSEUM
MUSIC CONCOURSE
NURSERY
CHILDREN'S PLAYGROUND
RICHMOND FREEWAY
PANHANDLE FREEWAY
OAK ST
PAGE ST
HAIGHT ST
WALLER ST
BEDFORD ST
FEET
100
200
220
250
280
300
DE LEUW, CATHER & CO., CONSULTING ENGINEERS • LADISLAS SEGOE, CONSULTING CITY PLANNER
TRAFFICWAYS
11
C-7
SUNSET FREEWAY
NINETEENTH AVE. PANHANDLE FREEWAY

DE LEUW, CATHER & CO., CONSULTING ENGINEERS • LADISLAS SEGOE, CONSULTING CITY PLANNER
TRAFFICWAYS
11
DAMNAMNIF FREEWAY
VAN NESS AVE
VAN NESS AVE SOUTH
MARKET ST
FRANKLIN ST
GOUGH ST
CENTRAL FREEWAY
OCTAVIA ST
LAGUNA ST
BUCHANAN ST
WEBSTER ST
FILLMORE ST
STEINER ST
PIERCE ST
SCOTT ST
DIVISADERO ST
BRODERICK ST
BAKER ST
LYON ST
CENTRAL AVE
MASONIC AVE
ASHBURY ST
CLAYTON ST
COLE ST
SHRADER ST
EXPRESS BUS STATION
ALAMO SQUARE
GEARY ST
O'FARRELL ST
HAYES ST
GROVE ST
FELL ST
OAK ST
PAGE ST
HAIGHT ST
TO CENTRAL FREEWAY
TO RICHMOND FREEWAY
TO SUNSET FREEWAY
280
260
240
220
200
180
160
140
120
100
80



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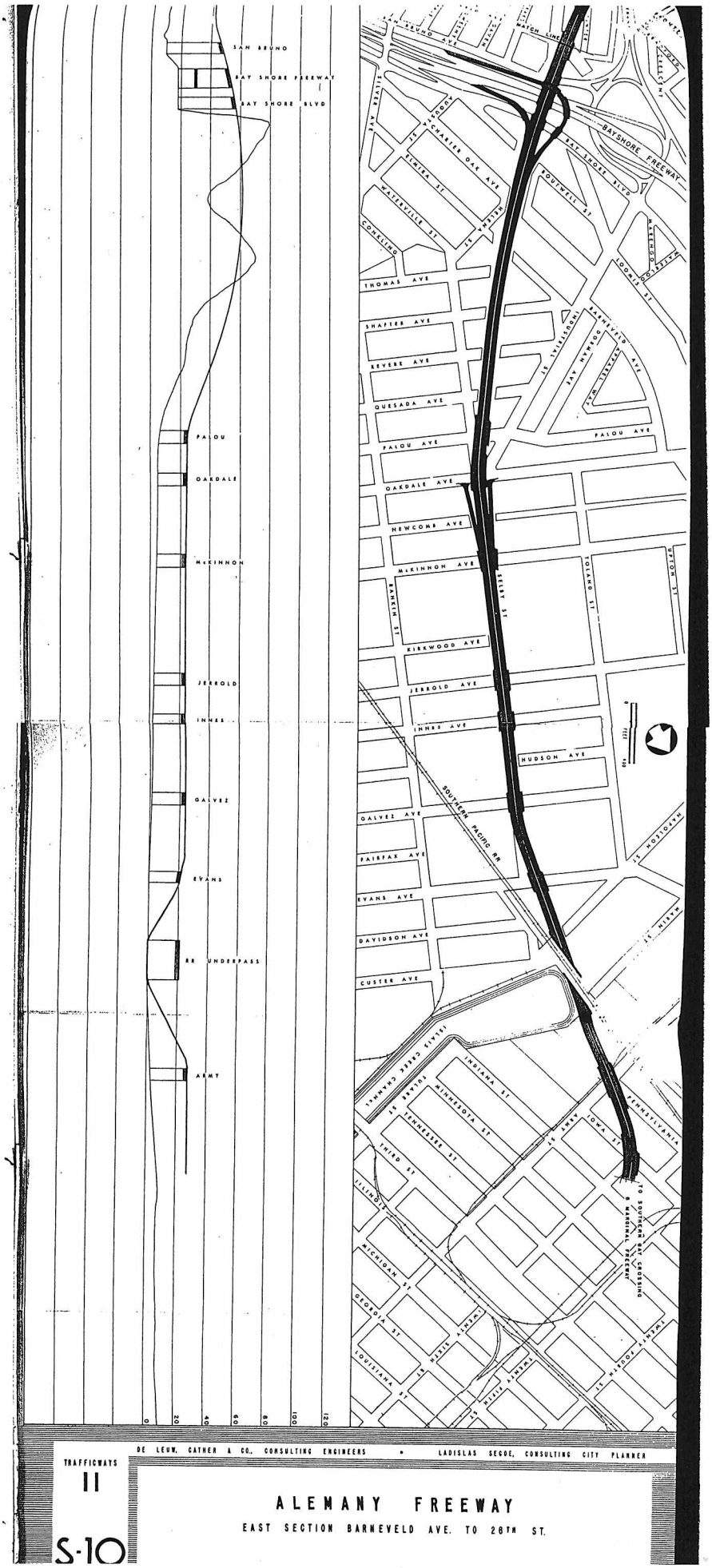
TRAFFICWAYS

II

S-9

ALEMANY FREEWAY

WEST SECTION MISSION FREEWAY TO BARNEVELD AVE.



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TRAFFICWAYS
11

S-10

ALEMANY FREEWAY

EAST SECTION BARNEVELD AVE. TO 26TH ST.

(strip maps btwn 12 & 13)

EXPRESSWAYS

Traffic volumes of about 15,000 to 20,000 cars per day on main through routes call for something less than full freeways but more than the usual major streets. Certain existing trafficways, especially in the outlying areas, could be readily developed into what is known as an expressway. An expressway is a thoroughfare providing for faster and safer than normal traffic movement and for greater capacity by means of special traffic control, grade separations at major cross thoroughfares, reduction in the number of cross streets, and other devices. Several such routes are recommended as extensions and additions to the freeway system where the existing or anticipated traffic volumes would not justify full freeway construction.

Fulton Street

With the elimination of street car operation from Fulton Street, this thoroughfare can accommodate its estimated traffic without roadway widening for a considerable period in the future. When additional capacity is required, it is recommended that the roadway be widened by taking a narrow strip of land from the park and constructing a modern divided roadway west of Park-Presidio Boulevard. This will constitute an extension of the Richmond Freeway. Grade separations may be required eventually at 25th and 40th Avenues.

Lincoln Way

Expressway development similar to that proposed for Fulton Street is recommended ultimately for Lincoln Way west of 19th Avenue. This will serve as an extension of the Sunset Freeway providing excellent connections to Sunset Boulevard and the Great Highway. A grade separation ultimately may be required at the Great Highway to avoid traffic delays. An improved interchange may also be required at the existing Sunset Boulevard separation to facilitate turning movements between east and south.

Sunset Boulevard

This existing parkway may easily be transformed into an expressway by separating grades at important cross thoroughfares and by closing unimportant intermediate streets. No land acquisition will be necessary. There are existing grade separations at Lincoln Way and Sloat Boulevard. The route will have an increasingly important function as a collector of traffic from the western part of the Sunset and the Lake Merced areas, now rapidly building up, destined for the downtown district by way of the Panhandle Freeway. Expressway treatment of this boulevard may be undertaken in easy stages, the initial steps being the installation of synchronized progressive traffic signals and the closing of the less important cross streets.

Great Highway

This broad divided highway along the Ocean Beach extends without intersections or cross traffic, except for pedestrians, from Lincoln Way to Sloat Boulevard, a distance of nearly two miles. Intermediate exits and entrances are suggested at Noriega and Taraval Streets to provide ultimately for grade separated interchanges. This expressway will become more useful as an outlet for Skyline Boulevard with the anticipated residential development in the areas south of Lake Merced.

Circumferential Expressway

The origin-destination survey revealed that there is considerable traffic which could be attracted to a circumferential route connecting the various outlying parts of the city. For lack of a good continuous route, much of this traffic passes through the congested central area. The 7th Avenue-Woodside-O'Shaughnessy route offers almost a ready-made channel for an express trafficway because of the topography and absence of marginal development along one side or both. This route should be connected directly into the Alemany Freeway south of the Mission Freeway by way of Bosworth Street. Eventually it should be extended across Golden Gate Park to Park Presidio Boulevard for access to the Richmond District and the Golden Gate Bridge. Woodside Avenue can be widened on the north side on undeveloped city property and the jog at Dewey Boulevard should be corrected. A grade separation at Portola Drive, widening curves along O'Shaughnessy Boulevard and installation of median strips may be required to accommodate increasing traffic volume.

This is another expressway capable of achievement in easy stages. The first and most important step is the acquisition of necessary rights-of-way and access rights to all remaining undeveloped private property along the route. This should be done immediately to forestall private encroachments which would deprive this thoroughfare of its expressway characteristics. Much of the adjoining land is already city owned.

Park Presidio Boulevard

This is an important link in the proposed system of major trafficways. It carries heavy rush hour weekend traffic to and from the Golden Gate Bridge, and through the Presidio to the Marina and North Beach Districts. It should be widened to provide three lanes in each direction, grade separations should be built at California, Geary and Balboa Streets, and the intervening minor street crossings should be closed.

Geary Street

This is the principal direct rhoroughfare between the Richmond District and the Central Business District. West of Presidio Avenue it is 125 feet wide and should be streamlined, after car track removal, into a high-capacity trafficway. Installation of progressive traffic signals and a semi-continuous traffic divider, and closing of unimportant local street crossings, are recommended.

East of Presidio Avenue, where the street width decreases to 78.75 feet, improvements are now being made which will channel traffic into O'Farrell and Post Streets, recommended for one-way operation. However, when the Western Addition is redeveloped along modern neighborhood lines, the use of both O'Farrell and Post Streets will have to be discontinued for through traffic. Therefore, as a permanent solution, it is recommended that Geary Street be widened from Presidio Avenue to Gough Street to provide for two divided roadways for through traffic with service drives on either side. Local streets would connect with these service drives only. The through

ways could be cut through the hilltop between Laguna and Gough streets and connected by diagonals into O'Farrell and Post Streets at Franklin Street.

Broadway

This thoroughfare should be developed as an expressway from Van Ness Avenue to The Embarcadero. Completion of the distributor loop around the Central Business District involves the use of Broadway on the north, and part of The Embarcadero on the east. Construction of the Broadway Tunnel under Russian Hill has been authorized and financed. East and west of the tunnel some widening of Broadway may be necessary to accommodate the traffic that will wish to use the tunnel. Grade separation may be required eventually at Columbus Avenue. From Stockton Street eastward, Broadway will function as a distributor street.

OTHER MAJOR THOROUGHFARES

No pattern of freeways and expressways can be expected to carry all through traffic in any city. Freeways need feeders and distributors. Some sections of the city too far removed from freeways will have to depend on surface thoroughfares. Few trips of less than two miles can be made along freeways and must of necessity use the surface street system which will require numerous improvements to function effectively.

During the past several years there have been a number of noteworthy improvements in the major street system. Nineteenth Avenue has been widened and modernized; Lombard Street has been given similar treatment; the Guerrero and Third Street improvements have virtually been completed; the long discussed Clipper Street extension has been finished; the Persia Avenue and Geneva Avenue cut-offs are now in use. Other improvements have been programmed for construction during the next three or four years.

Nevertheless, additional improvements are needed to provide for a fully coordinated and balanced system of thoroughfares adequate to meet the needs of San Francisco during the foreseeable future. Many of these have been suggested by others heretofore. They should all be coordinated along with other improvements over the next twenty years in accordance with need and with related freeway construction and redevelopment projects.

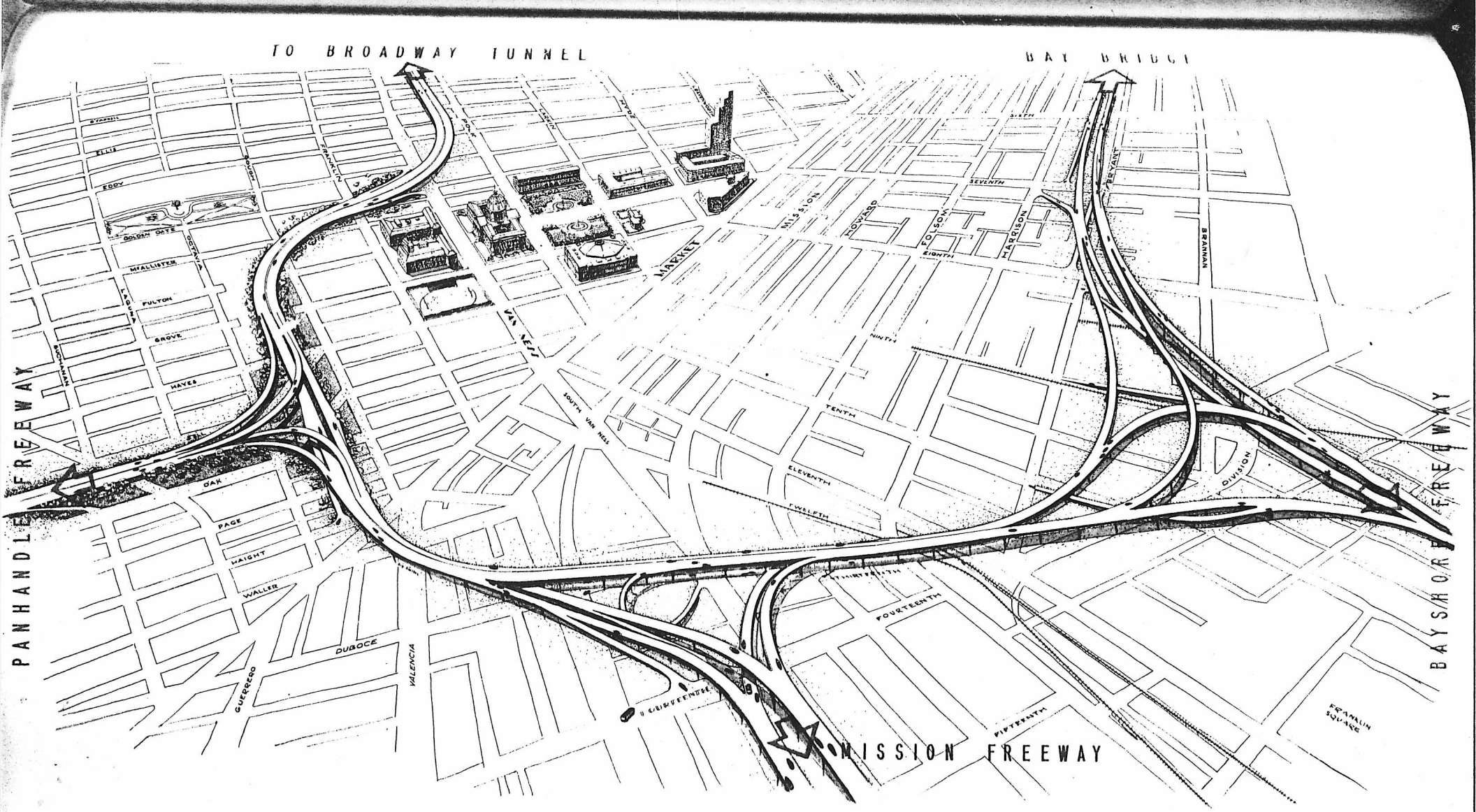
The projects in this group fall into three categories:

(a) Major Thoroughfares

(b) Secondary Thoroughfares

(c) Parkways

Major Thoroughfares are such traffic streets as Third Street which provide a continuous route for large volumes of mixed short haul traffic. They may carry four or six lanes of traffic including trunk transit lines. Usually they serve important business centers or industrial areas.



DE LEUW, CATHER & CO., CONSULTING ENGINEERS
LADISLAS SEGOE, CONSULTING CITY PLANNER

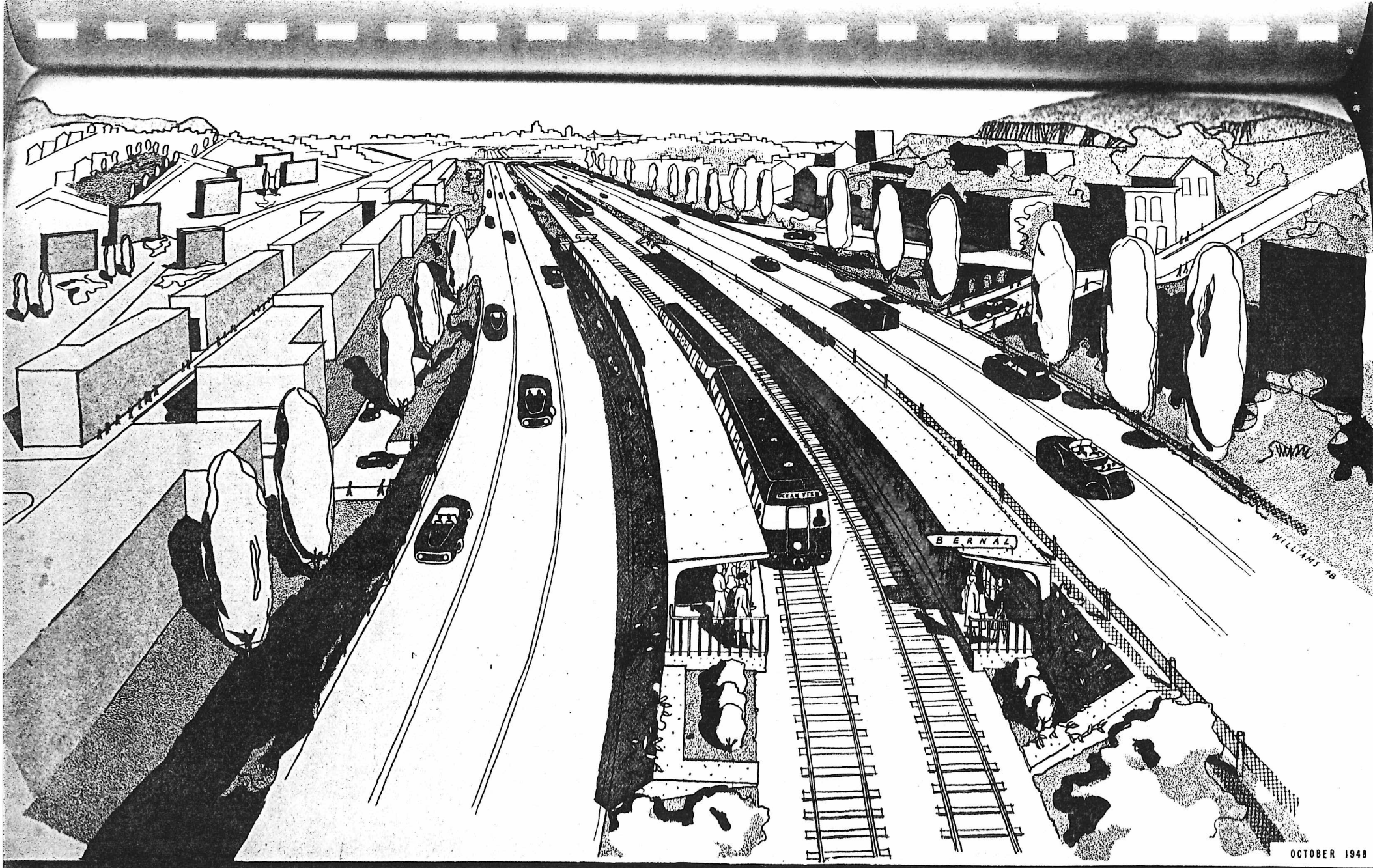
11 TRAFFICWAYS

13 PLATE

SAN FRANCISCO DEPARTMENT OF CITY PLANNING

VIEW OF CENTRAL FREEWAY

SHOWING CONNECTIONS TO PANHANDLE, MISSION, & BAYSHORE FREEWAYS AND TO BAY BRIDGE



OCTOBER 1948

DE LEUW CATHER & CO. CONSULTING ENGINEERS
LADISLAS SEGOE CONSULTING CITY PLANNER

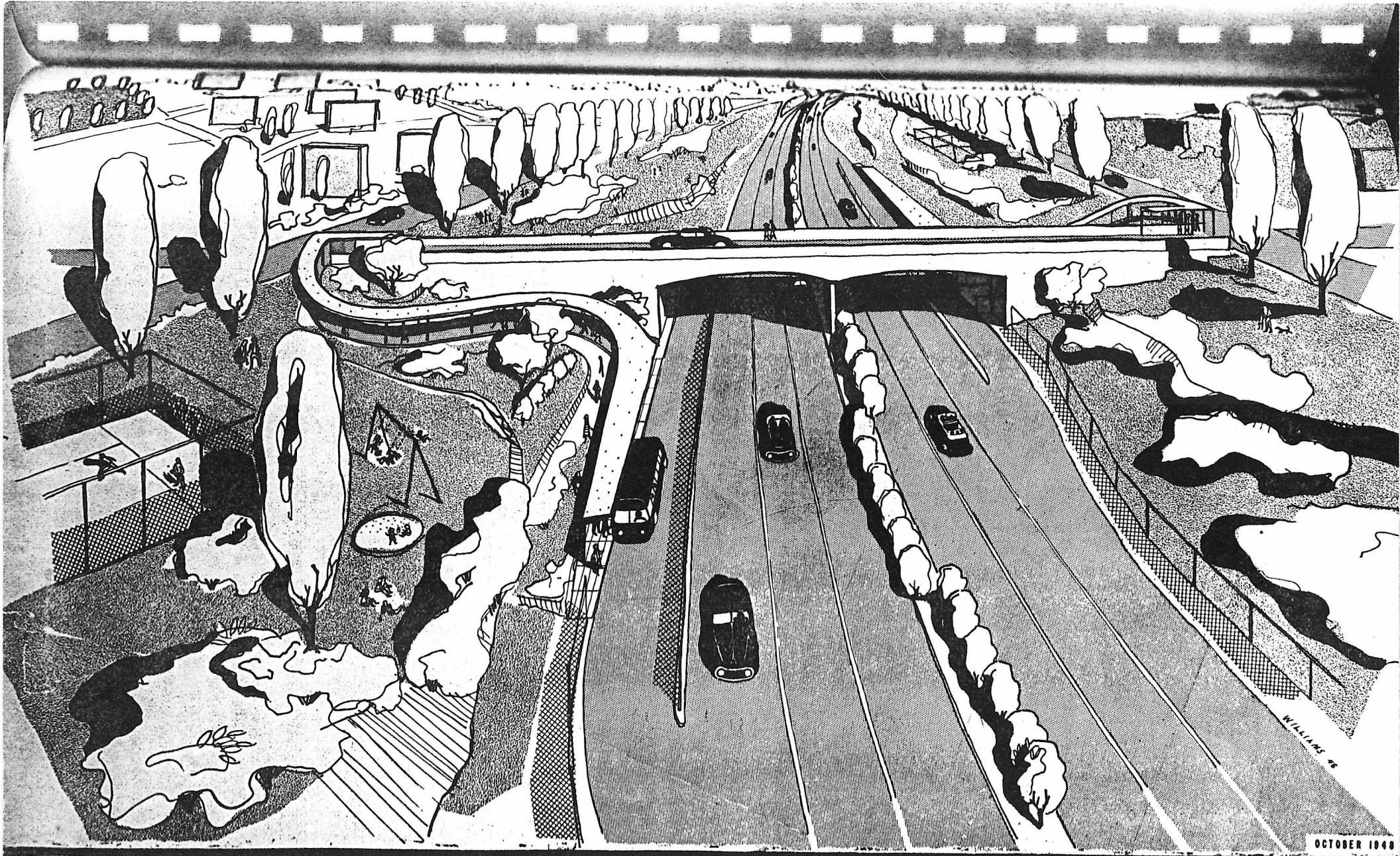
11 TRAFFICWAYS

14 PLATE

SAN FRANCISCO DEPARTMENT OF CITY PLANNING

MISSION FREEWAY

SHOWING RAPID TRANSIT STATION AT CROSSING UNDER FREEWAY



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III
TRANSIT

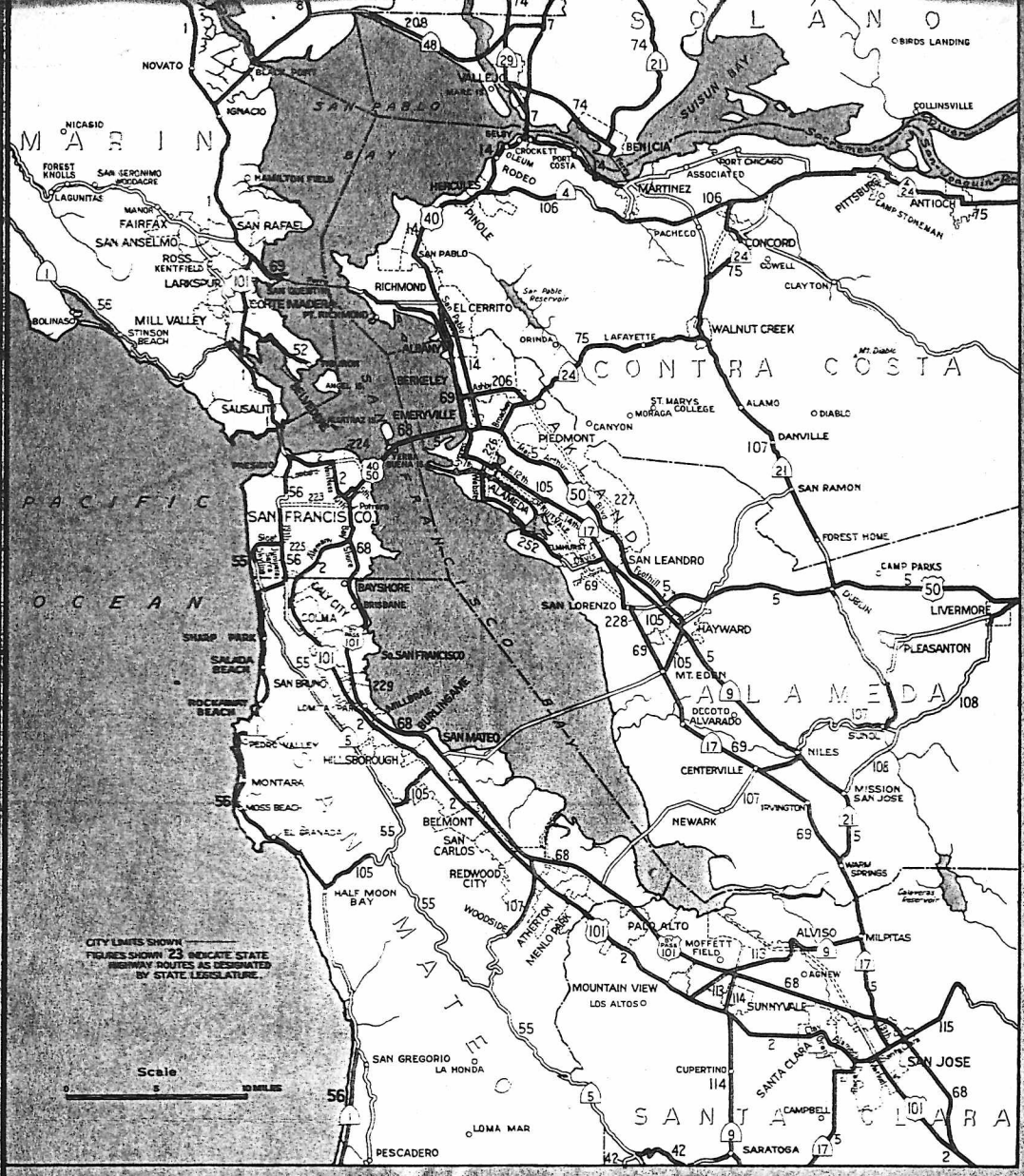
5
PLATE

SAN FRANCISCO DEPARTMENT OF CITY PLANNING

PANHANDLE FREEWAY

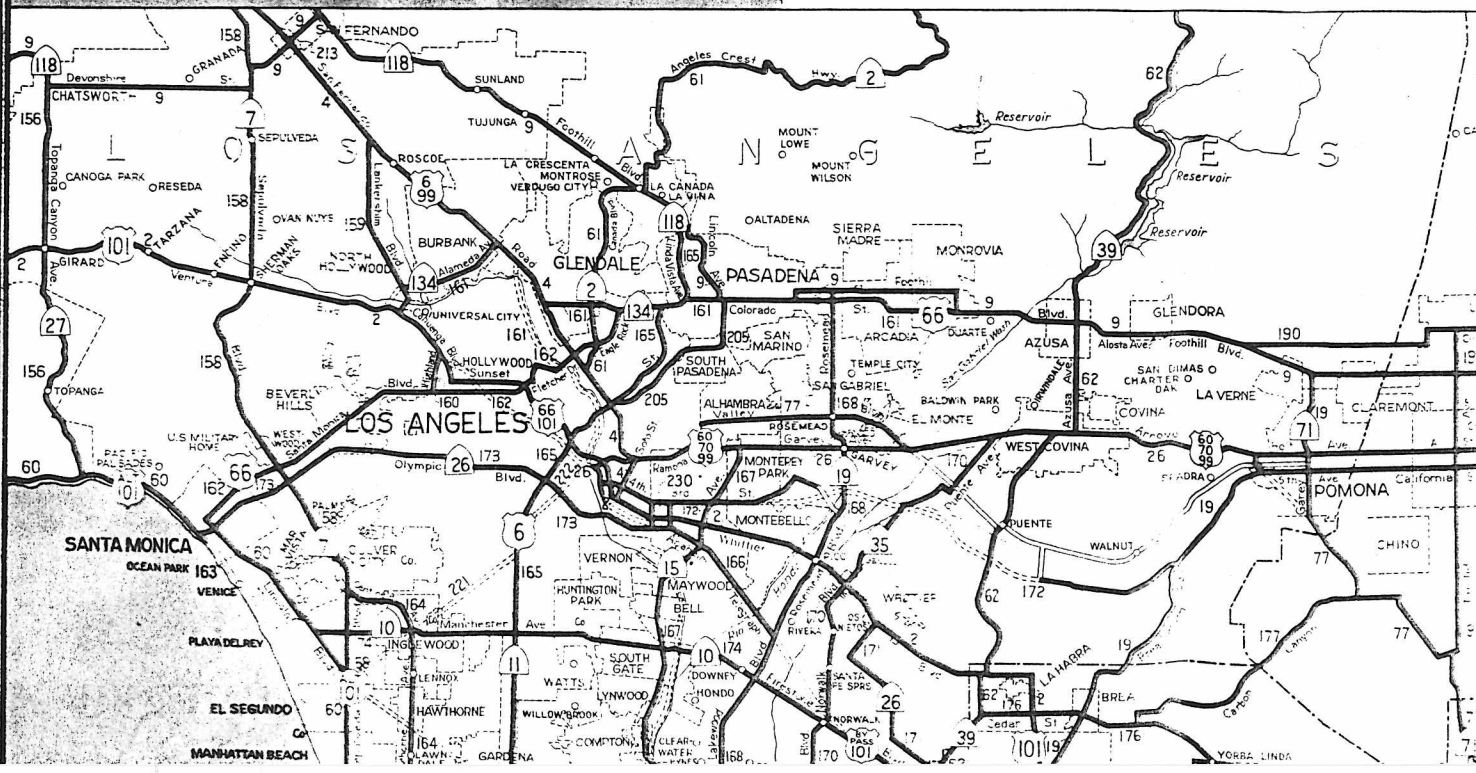
SHOWING BUS STATION AT OVERHEAD CROSSING

1948

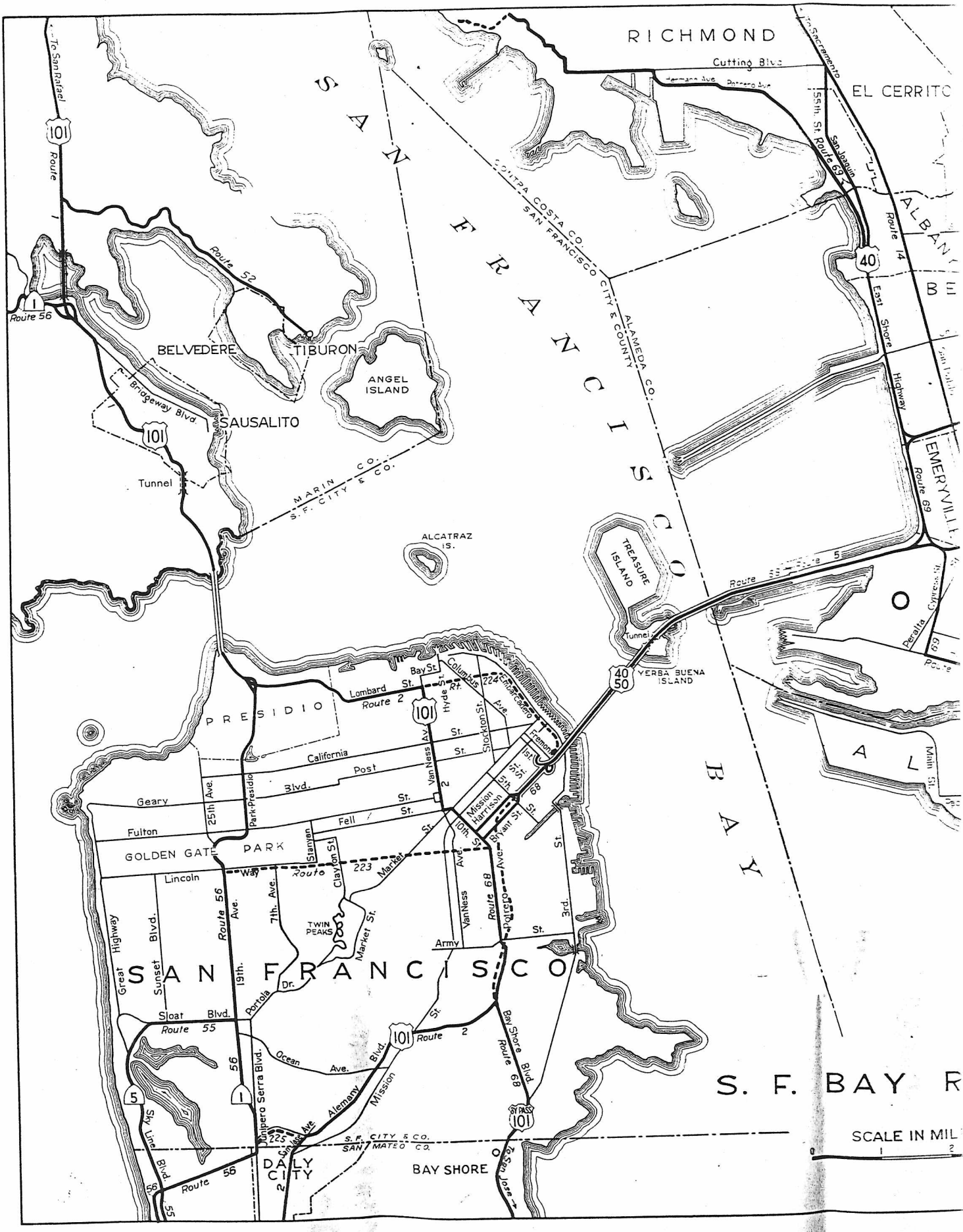


1949

LOS ANGELES AND VICIN

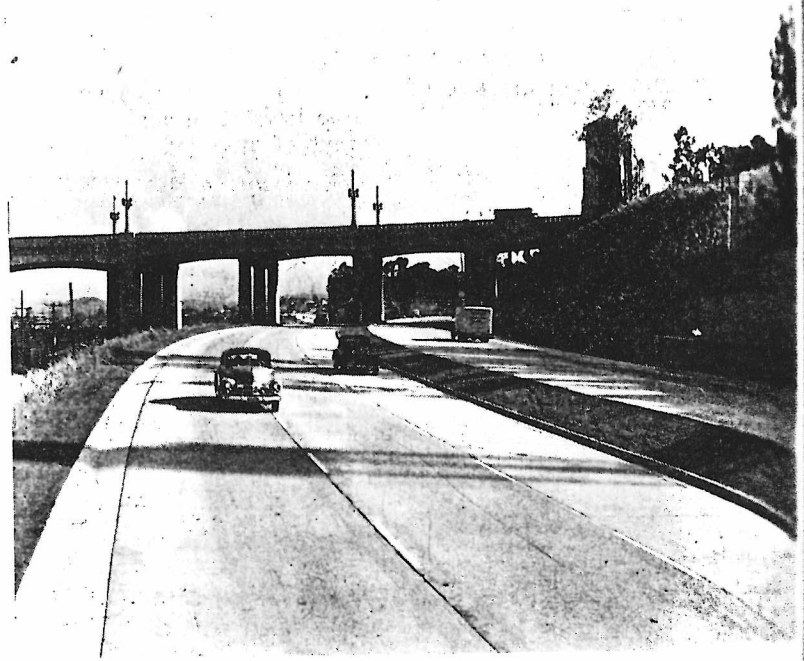


1949


RICHMOND
Cutting Blvd.
EL CERRITO
To Sacramento
San Joaquin
Route 69
ALBANY
Route 14
East Shore Highway
EMERYVILLE
Route 69
To San Rafael
Route 1
Route 101
Route 52
Route 56
BELVEDERE
TIBURON
ANGEL ISLAND
Bridgeway Blvd.
SAUSALITO
Tunnel
CONTRA COSTA CO.
SAN FRANCISCO
CITY & COUNTY
ALAMEDA CO.
MARIN CO.
S.F. CITY & CO.
SAN FRANCISCO BAY
ALCATRAZ IS.
TREASURE ISLAND
YERBA BUENA ISLAND
Route 50
Route 40
Tunnel
Peralta
Cypress St.
Main St.
PRESIDIO
Lombard St.
Route 2
Bay St.
Columbus
Embarcadero
Stockton St.
Fremont
Hyde St.
Van Ness Ave.
California St.
Post St.
Geary St.
Fell St.
Mission St.
Harrison St.
Bryant St.
10th St.
25th Ave.
Park-Presidio Blvd.
Fulton
GOLDEN GATE PARK
Stanyan
Clayton St.
Market St.
Route 223
Lincoln Way
Route 56
7th Ave.
19th Ave.
Great Highway
Sunset Blvd.
TWIN PEAKS
Army St.
Van Ness Ave.
Route 68
Potrero Ave.
3rd St.
SAN FRANCISCO
Sloat Blvd.
Route 55
Portola Dr.
Ocean Ave.
Junipero Serra Blvd.
Alemany Blvd.
Mission St.
Bay Shore Blvd.
Route 68
Sky Line Blvd.
Route 56
Route 55
Daly City
Bay Shore
San Jose
S. F. BAY R
SCALE IN MIL

1949

RECENTLY COMPLETED BAY SHORE FREEWAY near South San F
U. S. 101 By-Pass



SIXTH STREET VIADUCT OVER RECENTLY COMPLETED SECTION O
ANA PARKWAY in Los Angeles, U. S. 101

During the twelve months, July 1, 1947, to June 30, 1948, an addi- 110.5 miles were declared freeways, making a total of 1,178.9 miles lared freeway as of June 30, 1948.

Preliminary Engineering Authorizations—During the fiscal period, 1, 1947, to June 30, 1948, 816 preliminary engineering authoriza- to the various districts and the Bridge Department were activated. s almost double the amount of preliminary engineering under way previous period and represents the tremendous effort which has necessary to take care of immediate budgetary requirements as well velop a backlog of projects for future budgetary consideration.

and Research

program of investigation and research in paving and base design the structural adequacy and economy of design practices was during the year.

new concept of pavement design developed by the Materials and Laboratory was adopted for use on a trial basis. This concept, permits more accurate determination of pavement and base ents, and if confirmed by later experience, will do much to elimi- uncertainties which in the past have beset this controversial

ring the fiscal year, this section completed the study and analysis ect of heavy truck vehicles upon highway design costs.

Agencies

Design Section continued to act as the coordination agency the Division of Highways and other state agencies for which bridge improvements are undertaken.

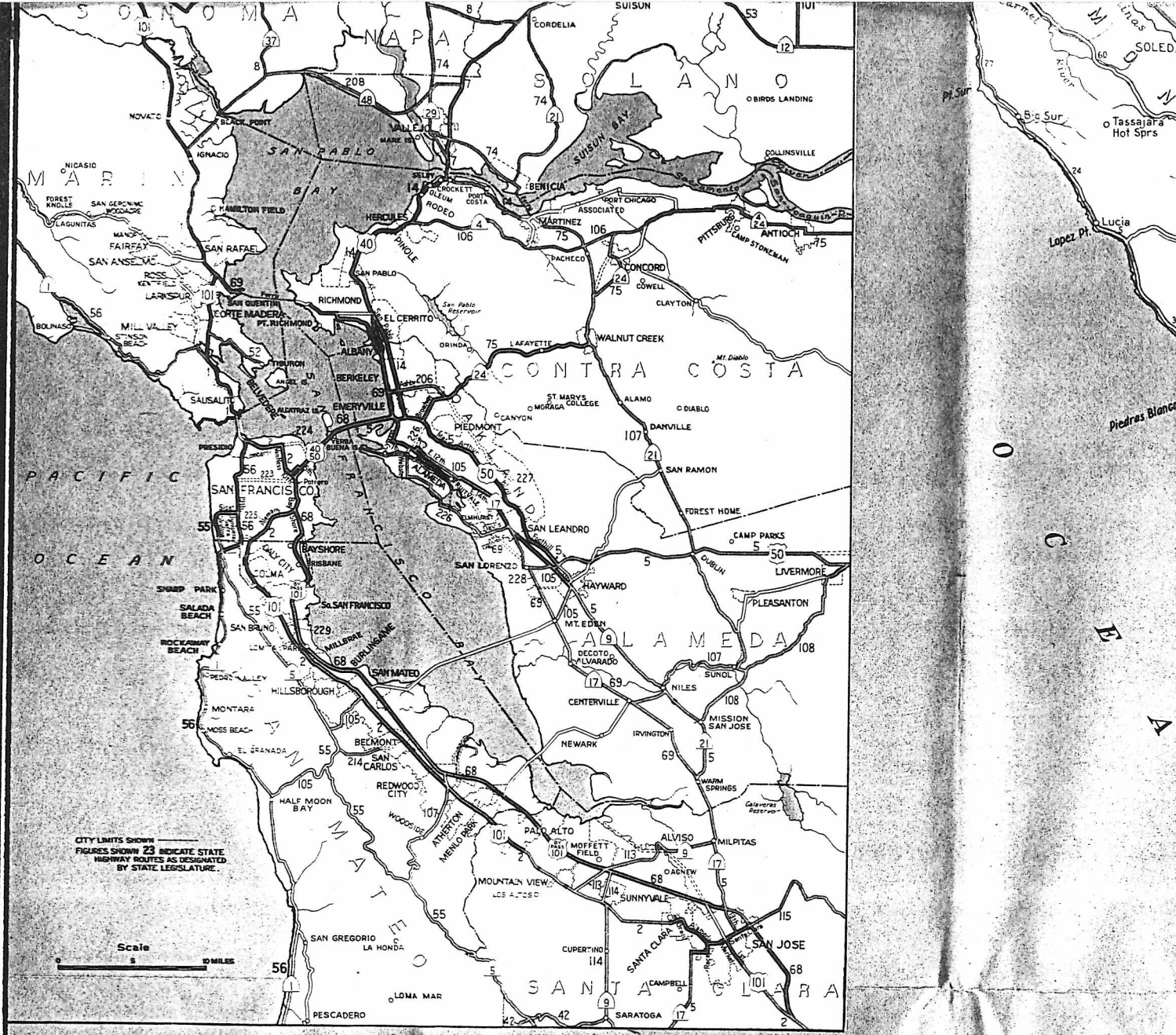
ison between the Division of Highways and the U. S. Engineers S. Reclamation Service with regard to harbor, flood and reclama- work, proposed by these federal agencies, and their effect upon the Highway system was continued. Investigations and reports were by this section on proposed public airport improvements and ect upon state highways; and recommendations were made to the Aeronautics Administration through the Public Roads Adminis-

ordination of the National Forest Highway Programs, involving ming, reconnaissance, study and approval of plans, was handled Design Section, which involves liaison with the U. S. Forest Service Public Roads Administration.

aping and Erosion Control

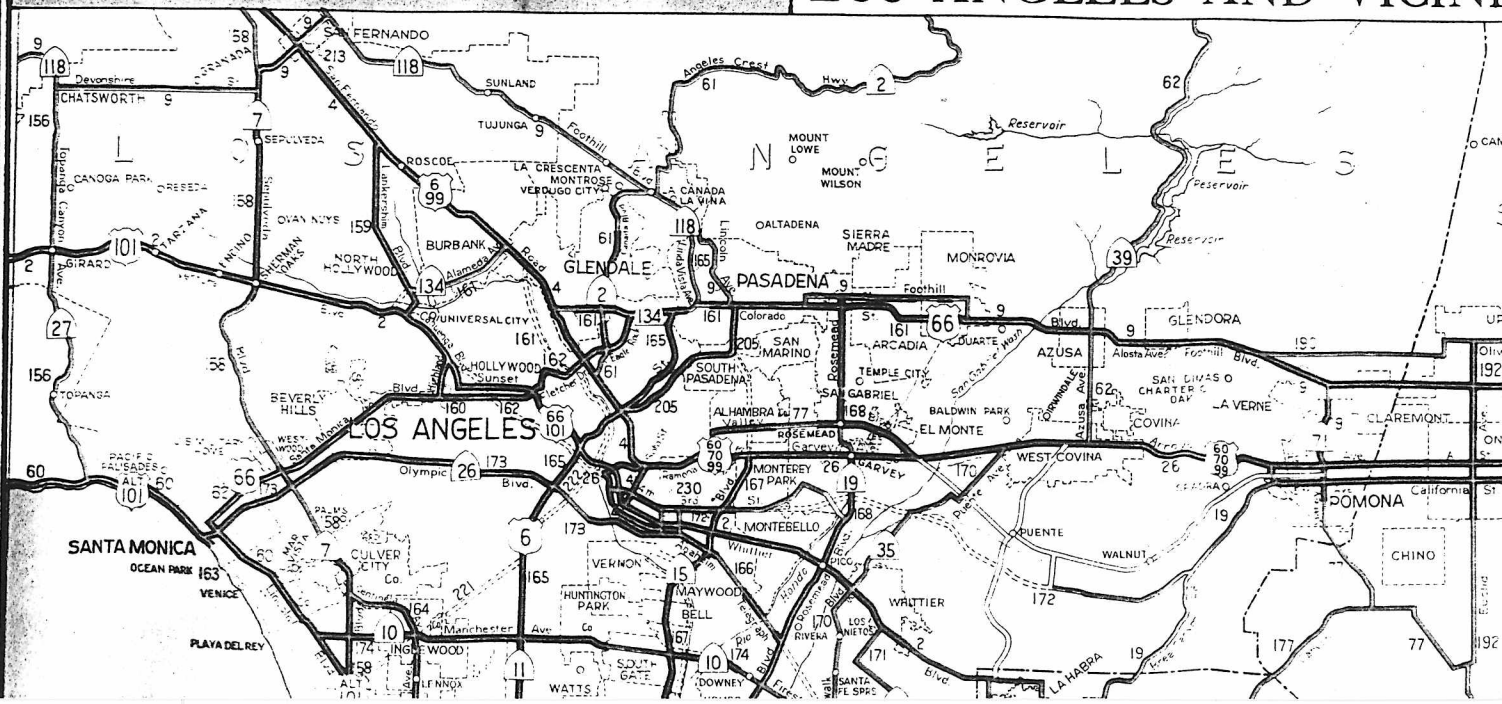
rosion control on all highway projects and landscaping treatment ays, particularly those in urban areas, are important elements in highways planning and improvement. The large investment in freeway development justifies full consideration of these

crease in the number of this type of project as a result of the highway program placed a heavy burden upon this unit of Section during the fiscal year, since all planting and land- plans are prepared in Headquarters, due to the special nature k. Careful coordination is required between the various dis- the highway landscape function from the initiation of the its final completion.

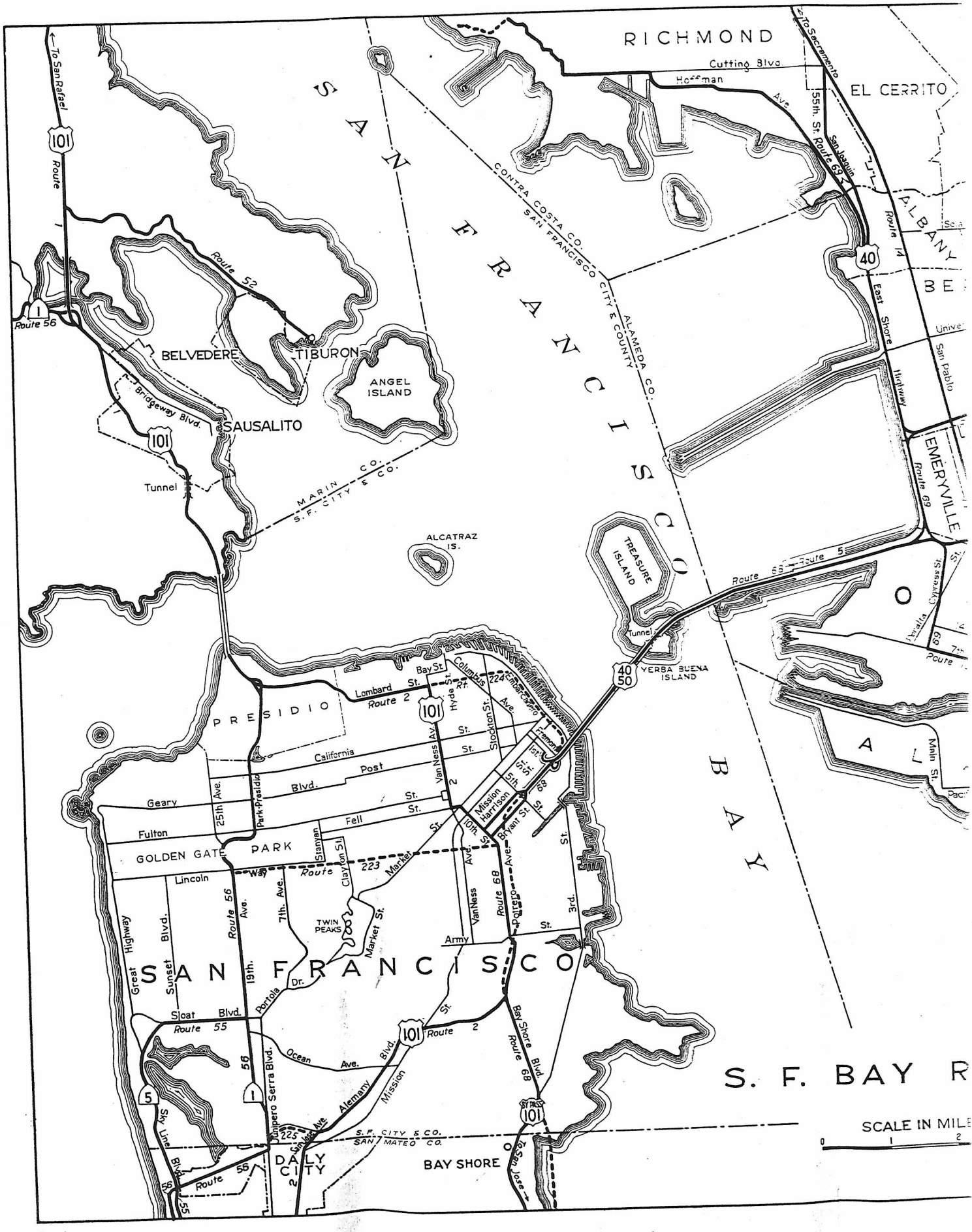


1950

LOS ANGELES AND VICINI



1950


RICHMOND
EL CERRITO
ALBANY
BERKELEY
EMERYVILLE
OAKLAND
ALAMEDA
SAN FRANCISCO
SAN FRANCISCO BAY
S. F. BAY R
BELVEDERE
TIBURON
ANGEL ISLAND
SAUSALITO
ALCATRAZ IS.
TREASURE ISLAND
YERBA BUENA ISLAND
PRESIDIO
GOLDEN GATE PARK
TWIN PEAKS
DALY CITY
BAY SHORE
CONTRA COSTA CO.
SAN FRANCISCO CITY & COUNTY
ALAMEDA CO.
MARIN CO.
S.F. CITY & CO.
SAN MATEO CO.
S.F. CITY & CO.
To San Rafael
To Sacramento
Route 1
Route 101
Route 52
Route 56
Route 40
Route 14
Route 69
Route 5
Route 2
Route 68
Route 55
Route 223
Route 225
Cutting Blvd.
Hoffman Ave.
155th St.
San Joaquin
East Shore Highway
San Pablo
Bridgeway Blvd.
Tunnel
Lombard St.
Bay St.
Columbus
Stockton St.
Fremont
Hyde St.
Van Ness Ave.
California St.
Post St.
Geary Blvd.
Fell St.
Fulton St.
25th Ave.
Park-Presidio
Stanyan St.
Clayton St.
Market St.
Lincoln Way
7th Ave.
19th Ave.
Great Highway
Sunset Blvd.
Sloat Blvd.
Portola Dr.
Ocean Ave.
Junipero Serra Blvd.
Alemany Blvd.
Mission St.
Army St.
Potrero Ave.
3rd St.
Bay Shore Blvd.
Sky Line Blvd.
Mission Harrison
Bryant St.
10th St.
5th St.
1st St.
Main St.
Webster St.
Harbor Rd.
Embarcadero
Alameda
Grand
Broadway
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Franklin
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